

**Integrated Risk Information System (IRIS)
Technical Support for Human Health Risk Assessment,
Peer Review, and Related Activities**

Technical Report

prepared by
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prepared for
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**Summary of Work Carried out by ORISE to Support
the U.S. EPA IRIS Program under IAG No. DW89939822-01-0
May 2003 to March 2010**

This report gives an account of work carried out by ORISE between May 2003 and March 23, 2010 to support the U.S. EPA IRIS Program under Inter-Agency Agreement No. DW89939822-01-0. All projects are itemized and the major deliverables and other milestones are listed with completion/submission dates.

(1) Preparation of Toxicological Reviews and IRIS Summaries

Project 03-02. 1,2,3-Trichloropropane (May, 2003–October, 2003)

ORISE was tasked to carry out a literature search and prepare drafts of a toxicological review and IRIS summary for 1,2,3-trichloropropane. First, an initial draft of the descriptive portions (Chapters 1–4) of the toxicological review was prepared. On instruction from the project manager, corrections to this draft were made and drafts of the complete toxicological review (Chapters 1–6) and IRIS summary were prepared. These were forwarded to the Agency on November 13, 2003. Further work carried out on this chemical under the IAG included preparing technically edited drafts of an EPA-updated toxicological review for the compound. These activities were carried out in April, 2005 and September, 2006 under Project 04-05 (On-call Technical Editing).

Project 03-03. Acrylonitrile (May, 2003–May, 2006).

In May, 2003, ORISE was tasked to carry out a literature search and prepare IRIS documents for acrylonitrile. Phase 1 of this complex project was carried out by ORISE with the participation of its expert consultant, Dr. Janusz Byczkowski. Phase 2 was carried out by the ORISE subcontractor, the Syracuse Research Corporation (SRC). Milestones of phase 1 of the project included: • a literature search product (July, 2003), • a first draft of Chapters 1–4 of a toxicological review for the compound (September and October, 2003), • a revised draft of Chapters 1–4 (March and April, 2004), • a first draft of Chapters 1–6 of the toxicological review and a draft IRIS summary (July, 2004) and • second drafts of these work products in December, 2004.

Phase 2 of this project was initiated in April, 2005 with the issue of a new statement of work. SRC submitted • a first draft of Chapters 1–6 of the toxicological review of acrylonitrile in

October and December, 2005, and • a technical memo on dose-response analysis of acrylonitrile data sets in response to EPA comments in May, 2006. Further work on this chemical carried out under the IAG included benchmark dose modeling of selected datasets in February, 2007 (under Project 04-06, On-call Benchmark Dose Modeling) and the technical editing of a draft toxicological review for this compound (under Project 04-05, On-Call Technical Editing). The latter was completed in March, 2008.

Project 03-04. n-Hexane (June 2003–April 2004)

ORISE was tasked on June 10, 2003 to carry out a literature search and prepare drafts of a toxicological review and IRIS summary of n-hexane. A literature search product was submitted to the Agency on July 31 and in revised form on August 15. An initial draft of the descriptive portions (Chapters 1–4) of the toxicological review was prepared and submitted to the project manager on October 2, 2003. On instructions from the project manager, corrections to this draft were made and drafts of the complete toxicological review (Chapters 1–6) were submitted to the Agency on January 7, 2004. A revised toxicological review and draft IRIS summary were subsequently forwarded on April 2, 2004.

Project 03-05. Chemical substance nominations for the 2004 IRIS program July, 2003–November, 2003

ORISE was tasked in July, 2003 to assist the IRIS office by collating and tabulating nominations of chemicals and substances for the 2004 IRIS program. Tables listing nominated substances and justifications for such nominations were submitted to the Agency in November, 2003. These work products are provided in the Appendix to this report.

Project 03-07. Carbon tetrachloride (August 2003–November, 2007)

ORISE was tasked on August 11, 2003 to carry out a literature search and prepare drafts of a toxicological review and IRIS summary for carbon tetrachloride. The project was assigned to the ORISE subcontractor, SRC. Important milestones and deliverables in this complex project included an initial draft of the descriptive portions (Chapters 1–4) of the toxicological review that was submitted to the project manager on February 13, 2004. Subsequent submissions and major revisions of Chapters 1–6 of the toxicological review were forwarded to the Agency in June, 2004, October, 2004, February, 2005, May, 2005, May, 2006, January 2007 (Section 5.2.2), May, 2007, August, 2007, and November 2007 (Revised Section 3.5 and Chapter 5). Additional work on this chemical carried out under the IAG included technically editing drafts of the toxicological review of the chemical (March, 2005 and March, 2007). This work was carried out under Project 04-05 (On-call Technical Editing). Physiologically based pharmacokinetic

modeling of selected datasets was also carried out Project 04-07 (On-call Physiologically Based Pharmacokinetic Modeling). Work products for this effort were submitted in July and November, 2007).

Project 03-08. Trichloroacetic acid (August 2003–December, 2004)

ORISE was tasked on August 11, 2003 to carry out a limited literature search and prepare drafts of a toxicological review and IRIS summary for trichloroacetic acid. The project was assigned to the ORISE subcontractor, SRC. Important milestones and deliverables in this project included • a literature search product in December 2003, • an initial draft of Chapters 1–4 of the toxicological review in January, 2004, and • subsequent drafts of Chapters 1–6 of the toxicological review in April, August, October, and December, 2004. Subsequent work on this chemical under the IAG included technical editing of toxicological review drafts. These were carried out under Project 04-05 (On-call Technical Editing). Work products were forwarded to the Agency in August 2006, and April, 2009.

Project 03-09. Dichloromethane (August 2003–March 2008)

ORISE was tasked on August 11, 2003 to carry out a literature search and prepare drafts of a toxicological review and IRIS summary for dichloromethane. The project was assigned to the ORISE subcontractor, SRC. Principal early milestones included • a literature search product in December, 2003, • draft Chapters 1–4 in April, 2004 and December, 2006, and • the cancer section of Chapter 5 and Appendix E in December 2006. Subsequent effort was heavily focused on dose-response analysis of relevant datasets including physiological based pharmacokinetic modeling. Chapters 1–3 and Chapter 4 were revised in May, 2007, Chapter 5 was submitted to the Agency in November, 2007, and Appendices B and C were forwarded in December 2007. A complete draft of Chapters 1–6 was prepared and submitted in January 2008. Subsequently, a new noncancer quantitative analysis was prepared in April 2008 and a new version of Chapter 5 was forwarded in May, 2008. ORISE technically edited a draft toxicological review for the compound in November 2008 under Project 04-05 (On-call Technical Editing). A complete draft of Chapters 1–6, containing all accepted revisions, was then forwarded to the Agency in January, 2009.

Project 03-11. On-call Literature Search and Retrieval (August, 2003–present).

ORISE was tasked in August, 2003 to carry out literature searches and retrieve articles from the scientific literature on an as-needed basis. This requirement has been extensively used by

IRIS/NCEA scientists for retrieving articles throughout the life of the contract. A list of all topics searched under this project is provided in the Appendix.

Project 03-14. Literature Screening Project (October, 2003–January, 2009).

As tasked by the Agency in October, 2003, ORISE has carried out a second round of screens (the first was carried out by the EPA contractor, Eastern Research Group) of the toxicological literature to determine whether relevant articles exist that might be available to update toxicity values in existing IRIS records. Throughout the life of the contract ORISE prepared (1) Reference Manager databases that capture the recent toxicity literature for individual chemicals, (2) summary narratives, by chemical, that present the findings of the literature screen, summarize toxicity values currently on IRIS and information from selected secondary sources, and document the search strategy for the chemical (captured in an Access database and in Word and PDF files), and (3) tables that summarized the status and findings of the literature search project for each chemical that was searched. The final deliverables of all work products for this task were sent to the Agency in January, 2009. A table listing all IRIS chemicals searched under this project is provided in the Appendix.

Project 03-15. Nitrobenzene (October, 2003–April, 2005)

ORISE was tasked by the Agency on October 1, 2003 to prepare IRIS documents for nitrobenzene. A literature search product was prepared and forwarded to the Agency in November, 2003, followed by a draft of the descriptive sections of the toxicological review (Chapters 1–4) in December, 2003. A draft of Chapters 1–6 of the toxicological review was submitted to the Agency in April, 2004. This was followed by a corrected draft in November, 2004. ORISE was subsequently tasked to carry out additional benchmark dose (BMD) modeling of relevant datasets, a project assigned to the SRC subcontractor, SRC. Technical memos documenting the results of this effort were forwarded to the Agency in February and March, 2005. ORISE subsequently submitted rewritten Chapters 5 and 6 in April, 2005. Further work on this chemical under the IAG included technical editing of toxicological review drafts, as carried out under Project 04-05 (On-call Technical Editing). These technical edits were carried out in December, 2005, April, 2008, and January, 2009.

Project 03-17. Benzo(a)pyrene (October, 2003–September, 2004)

ORISE was tasked in October, 2003 to prepare IRIS documents for benzo(a)pyrene. The task was assigned by ORISE to its subcontractor, Toxicology Excellence for Risk Assessment (TERA). A literature search was prepared by the subcontractor in March 2004, and a draft of Chapters 1–4 completed in May, 2004. There was general dissatisfaction on the part of ORISE

with TERA's response to comments and the work product was considered to be of unacceptable quality. The project was eventually taken over by ORISE and continued as project 04-08.

Project 03-18. Formaldehyde (November 2003–March, 2010)

ORISE has provided support to the Agency for its formaldehyde evaluation by • performing an initial literature search, providing regular search updates, and retrieving pdf copies of all relevant articles on the chemical, • constructing and maintaining a Reference Manager database of formaldehyde articles, • preparing write-ups of toxicology and genotoxicity studies of formaldehyde for early drafts of the report, • preparing tables and figures to illustrate key findings in summarized studies, • scientifically and technically editing all document chapters, • benchmark dose modeling of sensory irritation responses and other endpoints as documented in case reports, studies of human volunteers, and reports of studies in experimental animals, • engaging subject matter experts (Bayliss, Visintainer, and Valcovic) to read, evaluate, and supplement existing chapters with written summaries of newly published reports, • engaging the Environ Corporation as a subcontractor to undertake a specialized project on “two-stage model simulations of nasal cancer incidence and mortality,” and • assembling interim and finalized chapters into (1) a streamlined document on the human health impacts and toxicological effects of the compound and (2) a (three-volume) fully detailed draft of a *Toxicological Review for Formaldehyde*. As requested by the project manager, ORISE has also carried out secondary assignments to assist the project such as • listing and categorizing studies in its database for noncancer effects of formaldehyde in humans (512 of a total of 2839 articles were identified), • engaging a subcontracting scientist to independently “fact-check” material in the human health chapter of the document, and • obtaining copyright permission to use informative data figures from articles published in the open scientific literature.

Project 03-22. Formaldehyde Mode of Action Seminar (March, 2004)

ORISE engaged Dr. H d'A Heck to attend an Agency-sponsored seminar on the mode of action of formaldehyde.

Project 04-02. Dibromoethane (Technical edit) (April, 2004–June, 2004)

In April 2004 ORISE was tasked to technically edit an existing draft toxicological review and IRIS summary for dibromoethane. Edited drafts of these documents and accompanying appendices were forwarded to the Agency in June, 2004.

Project 04-03. Development of an approach to determine Relative Potency Factors for Polycyclic Aromatic Hydrocarbons (April 2004–January, 2009).

ORISE assigned the project entitled *Background Information and Suggested Recommendations for the Development of the Relative Potency Factor Approach for the Polycyclic Aromatic Hydrocarbon (PAH) Mixtures Health Assessment* to its subcontractor, SRC. Major milestones in this complex project included • a literature search product (January, 2005), • drafts of Sections 1–4 (March, 2005) and Sections 1–5 (August, 2005), • a first complete draft (March, 2007, revised according to EPA comments in July, 2007), • a second complete draft (June 2008) that was further revised according to EPA comments in January, 2009.

Project 04-04. Boron (Technical edit (April, 2004–June 2004)

In April 2004 ORISE was tasked to technically edit an existing draft toxicological review and IRIS summary for boron. Edited drafts of these documents and accompanying appendices were forwarded to the Agency in June, 2004.

Project 04-05. On-call technical editing (July, 2004–March, 2010)

In an effort to assist the Agency by technically editing IRIS documents that were near to completion, the ORISE on-call technical editing project was initiated in July, 2004. IRIS documents edited under this project include those for chloroform (December, 2004 and October, 2008), 1,2,3-trichloropropane (April, 2005 and September, 2006), barium (May 2005), carbon tetrachloride (March, 2005 and March, 2007), the dichlorobenzenes (August, 2005 and May, 2008), nitrobenzene (December, 2005), Stedeford issue paper (January, 2006), issue paper on bibliometrics (June, 2006), thallium (June, 2006 and February, 2009), trichloroacetic acid (August, 2006), 2,2,4-trimethylpentane (August, 2006 and June, 2007), pentachlorophenol (September, 2006), acrylamide (October, 2006), cadmium (November, 2006), bromodiphenyl ethers (December, 2006 and June, 2007), acrolein (January, 2007), dibutyl phthalate (March, 2007), cis-/trans-1,2-dichloroethylene (June, 2007), 1,1,1-trichloroethane (July, 2007), chlordecone (October, 2007), cyanide (December, 2007), propionaldehyde (February, 2008), cerium oxide (February, 2008), acrylonitrile (March, 2008), ethylene glycol butyl ether (March, 2008), beryllium (April, 2008), nitrobenzene (April, 2008), chloroprene (July, 2008) dichloromethane (November, 2008), hydrogen cyanide (January, 2009), nitrobenzene (January, 2009), uranium (February, 2009), 2-hexanone (January, 2008 and May, 2009), trichloroacetic acid (April, 2009), and perchlorate (May, 2009).

Project 04-06. On-call benchmark dose modeling (November, 2004–February, 2008)

In an effort to assist the Agency by quantitatively analyzing datasets of potential relevance to toxicity value development for IRIS documents that were near to completion, the ORISE on-call benchmark dose modeling project was initiated in November, 2004. Datasets for chemicals analyzed under this project included • the brominated diphenyl ethers (January, 2007), • acrylonitrile (February, 2007), and • chloroform (November 2007 and February, 2008). The ORISE subcontractor, SRC, carried out these tasks.

Project 04-07. On-call physiologically based pharmacokinetic modeling (October, 2004–November, 2007)

In an effort to assist the Agency by quantitatively analyzing datasets of potential relevance to toxicity value development for IRIS documents that were near to completion, the ORISE on-call physiologically based pharmacokinetic modeling project was initiated in October, 2004. As carried out by the ORISE subcontractor, SRC, datasets for chemicals evaluated under this project were those for 1,1,1-trichloroethane (see Project 04-10) and carbon tetrachloride (July, 2007 and November, 2007).

Project 04-08. Benzo(a)pyrene (October, 2004–October, 2007)

This represents the continuation of project 03-17. Among the milestones of the project were • an updated literature search product (October 2004); • a draft of Chapters 1–4 of the toxicological review that was rewritten and completed by ORISE toxicologists from a draft delivered by the subcontractor (January 2005); • a revised workplan to include PBPK modeling in the project (January 2005); • a decision by EPA's PBPK Work Group that PBPK modeling was not possible for this chemical (August 2006); • several workplan revisions to reflect this decision and attempts by the EPA PM to find a substitute for PBPK modeling (WP approved March 2007); • a change in EPA's PM (January 2007); • another updated LSP (April 2007); • comments on draft Chapters 1–4 by the current and former EPA PMs (August 2007); • delivery of revised Chapters 1–4 (October 2007). Subsequently, the project was continued in-house by EPA IRIS.

Project 04-10. Physiologically based pharmacokinetic modeling of 1,1,1-trichloroethane (September, 2004–January 2006)

ORISE was tasked to assist the Agency by carrying out physiologically based pharmacokinetic modeling of dose-response datasets for 1,1,1-trichloroethane. The work was carried out by scientists at Colorado State University as subcontractors to ORISE. A draft report was submitted in October, 2005, with a finalized version completed in January, 2006.

Project 04-11. 1,4-Dioxane (October 2004–October, 2007)

ORISE was tasked in October, 2004 to prepare IRIS documents for 1,4-dioxane. The assignment was given to the ORISE subcontractor, SRC. Milestones for the project included • the literature search product in August, 2005, • a draft of Chapters 1–4 of the toxicological review in September, 2005, • a memo in which the feasibility of carrying out physiologically based pharmacokinetic modeling of 1,4-dioxane was discussed (December, 2005), • technical direction from EPA on which modeling approach SRC should employ (May, 2006), • a report of the outcome of physiologically based pharmacokinetic modeling of 1,4-dioxane datasets and a draft of Chapters 1–6 of the toxicological review, and • a draft IRIS summary based on the findings of the toxicological review (October, 2007).

Project 04-13. Preparation of brochures and posters for a Society of Toxicology Meeting.

In 2005, 2006, and 2007, ORISE assisted EPA scientists with the preparation of brochures and posters for the annual Society of Toxicology meetings.

Project 04-15. Butyl benzyl phthalate (April, 2005–October, 2005)

In April 2005, ORISE was tasked to carry out a literature search and prepare Chapters 1–4 of the toxicological review of butyl benzyl phthalate. The task was assigned to the ORISE subcontractor, Sciences International. The results of a literature search were forwarded to the Agency in June, 2005. The draft of Chapters 1–4 was complete in October, 2005.

Project 05-02. Cerium and cerium compounds (May, 2005–October, 2006)

ORISE was tasked in May, 2005 to prepare IRIS documents for cerium and compounds (such as cerium oxide). The task was assigned to the ORISE subcontractor, SRC. Milestones for the project included • a literature search product in December, 2005, • a first draft of Chapters 1–4 of the toxicological review of the subject compounds in February, 2006, and • revised drafts of Chapters 1–4 in May and October, 2006.

Project 05-03. Arsenic review (May–September, 2005).

ORISE was tasked in May, 2005 to carry out a review of a draft Office of Water-prepared toxicological review and IRIS summary of inorganic arsenic and of three arsenic-related epidemiological manuscripts. ORISE engaged Dr. Herman Gibb of Sciences International as an expert reviewer. On behalf of ORISE, this scientist attended a 2-day meeting (September, 2005) to discuss issues relating to epidemiological studies of arsenic.

Project 05-04. Revision of an IRIS toxicological review for the dichlorobenzenes in response to consensus review comments (May, 2005–June, 2005).

ORISE was tasked in May, 2005 to revise a draft IRIS toxicological review of the dichlorobenzenes in response to consensus reviewer comments. ORISE assigned the task to its subcontractor, SRC, whose scientists were the authors of the original draft. A revised draft was submitted to the Agency in June, 2005. ORISE carried out a technical edit of this draft in August, 2005 under Project 04-05 (On-call Technical Editing).

Project 05-05 Ethyl tertiary butyl ether (March, 2005–September, 2005).

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a toxicological review of ethyl tertiary butyl ether (ETBE). The work was carried out by ORISE with the assistance of the ORISE expert consultants, Drs. C. Clifford Conaway and Janusz Byczkowski. Submitted to the Agency in August, 2005 and September, 2005, respectively, milestones of the project included • a literature search product and • a draft of Chapters 1–4 of the toxicological review. ORISE subsequently carried out a technical edit of a toxicological review draft of this chemical under Project 04-05 (On-call Technical Editing). This draft was submitted to the Agency in March, 2008).

Project 05-08. 1,1,2,2-Tetrachloroethylene (July, 2005–January, 2007).

ORISE was tasked in July 2005 to carry out a literature search and to prepare IRIS documents for 1,1,2,2-tetrachloroethylene. The task was assigned to the ORISE subcontractor, SRC. Milestones of this project included • a literature search product that was submitted to the Agency in October, 2005, • a draft of Chapters 1–4 of the toxicological review (March, 2006), • a draft of Chapters 1–6 of the toxicological review (May, 2006), and • the results of additional benchmark dose modeling of dose-response data on the compound (January, 2007). A graphical exposure array of dose-response information was prepared and sent to the Agency in January 2007.

Project 05-09. Hexachloroethane (July 2005–September, 2006).

ORISE was tasked to carry out a literature search and to prepare Chapters 1–4 of a toxicological review of hexachloroethane. The task was assigned by ORISE to its subcontractor, Sciences International. Milestones of this project included • a literature search product that was submitted to the Agency in December, 2005, • drafts of Chapters 1–4 of the toxicological review of the compound that were submitted to the Agency in February and April, 2006, and • a draft of Chapters 1–6 of the toxicological review (September, 2006).

Project 05-10 Acrolein (September 2005–October 2005).

ORISE was tasked to carry out an update of available acute toxicity literature for acrolein. The work was carried out by ORISE with an important contribution from the ORISE expert consultant, Dr. C. Clifford Conaway. ORISE rewrote Section 4.1.1 (Acute exposures) of an existing draft toxicological review of acrolein and prepared an updated version of Appendix B (Dose-response calculations--categorical regression analysis). Revisions were provided to the client in redline/strikeout format in October, 2005. ORISE subsequently technically edited a toxicological review draft of this chemical under Project 04-05 (On-call Technical Editing). This work product was submitted to the Agency in January, 2007.

Project 05-14. Platinum and compounds (November 2005–December, 2007)

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a toxicological review of platinum and compounds. An important part of the effort was that the write-up should be an expansion of an earlier Provisional Peer Reviewed Toxicity Value (PPRTV) document that had been prepared by SRC. ORISE assigned this task also to SRC. Milestones of this project included • updated searches for additional literature (postdating the PPRTV document), • an initial draft of Chapters 1-4 of the toxicological review (March, 2006), • receipt of comments on SRC's draft (July, 2007), • a second draft of Chapters 1–4 (November, 2007), • a written update of Chapter 3 of the review (December, 2007, and • separately revised Chapters 1–4 and Chapter 3 of the toxicological review (December, 2007).

Project 05-15. Pentachlorophenol (November, 2005–August, 2006)

ORISE was tasked to analyzed cancer datasets for the pentachlorophenol toxicological review. The effort was assigned to the ORISE subcontractor, SRC. Milestones for the project included • packages of BMD modeling results of cancer datasets (March, 2006 and August, 2006).

Project 05-16. cis- and trans-1,2-Dichloroethylene (November, 2005–January, 2007).

ORISE was tasked by the Agency to prepare IRIS documents for cis- and trans-1,2 dichloroethylene. The project was carried out by ORISE with the assistance of expert consultants Drs. C. Clifford Conaway and Janusz Byczkowski and Ms. Susan Goldhaber. Milestones of the project included • a literature search product (January, 2006), • drafts of Chapters 1–4 of the toxicological review (February and September, 2006), and • a draft of Chapters 1–6 of the toxicological review (January, 2007. ORISE subsequently technically edited a toxicological review draft of this chemical under Project 04-05 (On-call Technical Editing). This work product was submitted to the Agency in June, 2007).

Project 05-17. Naphthalene (December, 2005–February, 2006).

ORISE was tasked to prepare an issue paper on the mode of action of the inhalation carcinogenicity of naphthalene. The project was assigned to the ORISE subcontractor, SRC, who completed the draft in February, 2006.

Project 05-18. Methanol (January, 2006–April, 2008).

ORISE was tasked to evaluate the carcinogenic potential of methanol and its metabolites relevant to the cancer assessment portion of an existing draft toxicological review. An amendment to the statement of work (June, 2006) requested that additional work be done on the noncancer portions of the existing toxicological review. ORISE undertook to fulfill all of the requirements of the statements of work as part of an integrated team with the Environ Corporation. Major milestones of this complex project included • the results of a literature search (June, 2006), • draft rewrites and additional material for Sections 4.2, 4.5, and 4.7 and a modeling plan (May, 2006), • draft rewrites of Chapter 4 (July and August, 2006), • a report on time-to-tumor modeling of Ramazzini Foundation datasets (July, 2006), • a revised cancer dose-response modeling report (February, 2007), • a plan to evaluate the total cancer potency of methanol arising from independent tumors occurring at any site (April, 2007), • a description of the method for combining tumors (May and June, 2007), • a software development plan (July, 2007), models and files (September and October, 2007), • source code and draft documentation (February, 2008), • draft Section 5.4 (Uncertainty) of the toxicological review (March, 2008), and • complete Chapters 4, 5, and 6, and Appendices A, B, and C of the methanol toxicological review (April, 2008).

Project 06-02. Trichloroethylene (July, 2006–May, 2008).

ORISE was tasked to search, collect, supplement, and tabulate toxicity literature for trichloroethylene and its metabolites. The work was carried out by ORISE with the assistance of consultant, Dr. C. Clifford Conaway. Complete summary tables were forwarded to the Agency in August, 2006.

In response to a subsequent statement of work (amendment 3) of Project 06-02, ORISE undertook to search the literature for articles on the neurotoxicity of trichloroethylene and its metabolites, to tabulate study details and outline results from retrieved studies, and to prepare material for an in-depth monograph of the findings in human exposure and toxicological studies. ORISE engaged two recognized expert consultants, Drs. Larry Fechter and Rosemarie Bowler for this effort., assisted by Drs. Eileen Mahoney and C. Clifford Conaway, who were both working in a quality assurance capacity. Summaries were written of key studies identified in the

literature search and quality controlled tables were assembled that drew together the key points of the studies in abbreviated form. These work products were submitted to the Agency in May and June, 2008.

Project 06-03. Asbestos Literature Search (June, 2006–August, 2006)

ORISE was tasked to assist the Agency by carrying out a comprehensive search of the literature on Asbestos. A number of teleconferences took place to scope the project and ORISE forwarded a number of workplans to the Agency. However, these plans were not approved and the project was not authorized. However, some limited searching on asbestos was carried out under Project 06-09, (Mode of Action).

Project 06-04. Inter-agency scoping meeting for an IRIS cancer evaluation of asbestos (June–September, 2006).

ORISE was tasked to facilitate a 2-day scoping meeting on the cancer potential of asbestos. The meeting was held in Washington, D.C. on August 30 and 31, 2006. A draft meeting report was submitted to the Agency in September, 2006.

Project 06-07. Documentary support for cadmium (January, 2007–June, 2007)

ORISE was tasked to assist the Agency by searching and screening the literature, updating an existing Reference Manager database, and retrieving relevant articles on cadmium. An important feature of the project was to ensure that articles cited in documents prepared by other Agencies, such as IARC and CalEPA, were accounted for (retrieved and listed in the database). A number of submissions of search results, hard copies of relevant articles, and Reference Manager updates were forwarded to the Agency between January and June, 2007.

Project 06-08. Expert “white papers” on Uncertainty in Cancer Risk Assessment (August, 2006–June, 2007).

ORISE was tasked to engage as subcontractors recognized experts in the field of risk assessment. The goal of the project was for these experts to prepare “white papers” on topics related to uncertainty in cancer risk assessment. Issue papers were received from the following experts; Douglas Crawford-Brown (December, 2006), David Gaylor (January, 2007), Kenneth T. Bogen (February, 2007), Joshua Cohen (February, 2007), Dale Hattis and Rob Goble (February, 2007), L. Anthony Cox (February, 2007), and Mitchell J. Small (June, 2007).

Project 06-09. Application of Mode of Action Information in Health Assessment of Environmental Chemicals. (September, 2006–April, 2007).

In a collaborative project, ORISE was tasked to assist the Agency by developing approaches and methods to apply Mode of Action (MOA) information in qualitative and quantitative risk assessments for environmental chemicals. ORISE carried out a search of the literature for articles that addressed the cancer and noncancer impacts of toxicants where the mode of action is addressed. ORISE toxicologists screened the search and forwarded a marked-up Reference Manager database to the Agency. ORISE subsequently categorized the entries according to different modes of action suggested by the client, and, as requested, focused a further round of searching and article identification on one specific mode of action (non-DNA genotoxins/DNA methylation). Approximately 100 articles were identified (December, 2006).

ORISE also carried out a search of the literature on cancer mode of action for asbestos as part of this project. The Reference Manager database was completed and sent to the Agency in March, 2007.

Project 06-13. The Dichlorobenzenes (update) (January, 2007–September, 2007).

ORISE was tasked to prepare a rewritten version of the toxicological review of the dichlorobenzenes in light of comments from expert reviewers in the second external peer review of this document. Milestones of the project included • a literature search product (March, 2007), • Chapters 1–4 of the revised review (April, 2007), • a draft write-up of the genotoxicity section of the review (May, 2007), and • a draft write-up of the cancer mode of action of 1,4-dichlorobenzene (August and September, 2007). ORISE subsequently technically edited a toxicological review draft of this chemical under Project 04-05 (On-call Technical Editing). This work product was submitted to the Agency in May, 2008).

Project 06-14. Di(2-ethylhexyl)phthalate (December, 2006–April, 2009).

ORISE was tasked to carry out a literature search and prepare Chapters 1–4 of a toxicological review of Di(2-ethylhexyl)phthalate. The project was assigned to the ORISE subcontractor, Research Triangle Institute (RTI). This complex project was marked by general dissatisfaction on the part of the client and ORISE on the subcontractor's performance. Deadlines were not met and the work products were considered to be of marginal quality. Among the milestones of the project were • the preparation of an acceptable literature search product after much review by ORISE (October, 2007) and • a draft of Chapters 1–4 of the toxicological review that was rewritten and completed by ORISE toxicologists from sections and chapters that had been forwarded piecemeal to ORISE from the subcontractor (March and April, 2009).

Project 06-17. Naphthalene (March, 2007–November, 2008).

ORISE was tasked to conduct a literature search and prepare a draft of Chapters 1–6 of a toxicological review of naphthalene. The project was assigned to the ORISE subcontractor, SRC. The basic purpose of the project was to build on (1) existing Agency draft documents on naphthalene, (2) reviewer comments on those earlier drafts, and (3) an updated literature search to be carried out by the subcontractor. Milestones of this complex project included • an updated literature search product (July and September, 2007), • a first draft of Chapters 1–4 of the toxicological review of naphthalene, and • revised drafts of Chapters 1–4 of the naphthalene review (September and November, 2008).

Project 06-20. Tertiary amyl methyl ether and 4,4-dimethyl-3-oxahexane (May, 2007–October, 2007).

ORISE was tasked to conduct a literature search and prepare Chapters 1–4 of a toxicological review of tertiary amyl methyl ether (TAME) and 4,4-dimethyl-3-oxahexane (TAEE). The task was assigned to the ORISE subcontractor, SRC. A literature search product was forwarded to the Agency in October, 2007. No further work was carried out on the project.

Project 06-21. Biphenyl (May, 2007–January, 2008).

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a toxicological review of biphenyl. A search of the literature was completed in August, 2007 and a draft of Chapters 1–4 of the review was forwarded to the Agency in January, 2008.

Project 06-22. Bisphenol A (May, 2007)

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a Toxicological Review for Bisphenol A. A proposal was solicited and received from the ORISE subcontractor, SRC. SRC's workplan was forwarded to the Agency but was not funded. No further work was carried out on this project.

Project 06-23. Diisopropyl ether (April, 2007–August, 2007).

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a toxicological review of diisopropyl ether (DIPE). The task was assigned to the ORISE subcontractor, SRC. A literature search product was forwarded to the Agency in August, 2007. No further work was carried out on the project.

Project 06-24. Urea (April, 2007–May, 2008).

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a toxicological review of urea. The task was assigned to the ORISE subcontractor, Integrated

Laboratory Systems (ILS). Milestones of the project included • a literature search product (July, 2007), and • a first draft of Chapters 1–4 of the toxicological review of urea (May, 2008).

Project 06-25. Chromium VI (June, 2007)

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a Toxicological Review for hexavalent chromium. A proposal was solicited and received from the ORISE subcontractor, SRC. SRC's workplan was forwarded to the Agency but was not funded. No further work was carried out on this project.

Project 06-26. Diethyl phthalate (May, 2007–December, 2007).

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a toxicological review of diethyl phthalate. The task was assigned to the ORISE subcontractor, RTI. Milestones of the project included • a literature search product (October, 2007), and • a first draft of Chapters 1–4 of the toxicological review of diethyl phthalate (December, 2007).

Project 06-27. Hexabromocyclododecane (May, 2007–June, 2007).

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a toxicological review of hexabromocyclododecane. A search of the literature was completed by ORISE and forwarded to the Agency in June, 2007. No further work was carried out on the project.

Project 06-28. Weathered toxaphene (May, 2007–September, 2007).

ORISE was tasked to carry out a literature search and prepare a draft of Chapters 1–4 of a toxicological review of weathered toxaphene. The project was assigned to the ORISE subcontractor, Environ Corporation. A search of the literature was completed September, 2007. No further work was carried out on the project.

Project 07-03. Extracting and tabulating select data on cadmium (July, 2007)

ORISE was tasked to assist the Agency by extracting and tabulating toxicological information from relevant studies of cadmium that had previously been assembled in a Reference Manager database by ORISE (Project 06-07). A workplan was submitted to the Agency but was not funded.

Project 07-04. Assessing how IRIS is used by non-EPA decision-makers (August, 2007–January, 2008).

ORISE was tasked to carry out a “market survey” of how the information on IRIS is used by non-EPA decision-makers. The project was assigned to the ORISE subcontractor, Environ Corporation. Milestones of this project included ● a list of non-EPA IRIS users, ● a report on developing an approach for gathering information, and ● an issue paper on suggestions for a pilot program (January, 2008).

Project 07-05 Butyl benzyl phthalate (May, 2007–August, 2007)

ORISE was tasked to prepare a literature search and draft IRIS documents for the compound butyl benzyl phthalate. The project was assigned to the ORISE subcontractor, SRC. As specified in the statement of work, the literature search/retrieval effort was confined to existing documents provided by the client. A draft of Chapters 1–4 of the toxicological review for the compound was submitted to the Agency in August, 2007.

Project 10-01 Literature search and retrieval for three IRIS compounds (December 2009–March, 2010)

ORISE was tasked in December, 2009 to carry out updated literature searches for the three IRIS chemicals, 1,2-dichloroethane, tetrachloroethylene, and vanadium pentoxide. The literature search results were forwarded to the Agency within 14 days of acceptance of the workplan. On a continuing basis ORISE has subsequently retrieved articles that were identified from the searches by EPA/NCEA and IRIS personnel.

(2) Support for Peer Reviews and Meeting Facilitation

Personnel from the ORISE Scientific and Technical Resource Integration (STRI) division assisted EPA IRIS/NCEA by convening and facilitating peer review workshops in which the scientific and technical validity of Agency draft toxicological reviews and IRIS summaries were assessed by independent experts. As guided by the sponsor, ORISE personnel planned the review, identified the experts, conducted/coordinated the peer review, managed the information, and reported all findings.

Toxicological reviews assessed in this manner, with project numbers and report dates, are listed in Table 1. Reviews of other NCEA documents and initiatives are listed in Table 2.

Table 1. Draft toxicological reviews independently assessed in STRI-convened workshops and letter reviews.

Task number	Chemical	Review/report dates
03-06	Toluene	May, 2004
03-10	Barium	October, 2004
03-13	Dichlorobenzenes	December, 2004
03-19	Perchlorate	January, 2005 (cancelled)
03-23	Naphthalene (inhalation carcinogenicity)	September, 2004
04-09	n-Hexane	April, 2005
05-07	Dibutyl phthalate	August, 2006
05-12	Dichlorobenzenes	November, 2006
05-13	Polybrominated diphenyl ethers	February, 2007
06-10	1,1,1-Trichloroethane	April, 2007
06-11	1,2,4-Trimethylpentane	March, 2007
06-12	Nitrobenzene	June, 2007
06-15	1,2,3-Trichloropropane	April, 2007
06-18	Bromobenzene	September, 2007
07-02	Tetrahydrofuran	December, 2007

Table 2. STRI-convened workshops and letter reviews of other NCEA technical documents/initiatives in support of the IRIS program

Task number	Topic	Review/report dates
03-16	Review of <i>Technical guidance document for dose-response modeling and benchmark dose estimation of neurobehavioral toxicity screening data.</i>	December, 2003
03-21	Review of <i>An evaluation of the human carcinogenic potential of ethylene glycol butyl ether: Interim final position paper.</i>	May, 2004
04-12	Workshop and meeting report on <i>Research needs to determine a cancer mode of action for naphthalene.</i>	April, 2005
05-11	Review of <i>Physiologically based pharmacokinetic modeling of trichloroethane.</i>	April, 2006
06-06	Letter review of an unpublished toxicological study of ceric oxide carried out by Bio-Research Laboratories, Ltd.	August, 2006
06-16	Review of EPA benchmark dose modeling software.	June, 2007
06-19	Review of <i>Dermal exposure assessment: A summary of EPA approaches: Final Report.</i>	July, 2007
06-29	Review of an unpublished toxicological study on propionaldehyde.	August, 2007
07-06	Review of <i>A comparative chronic toxicity study of methyl n-propyl ketone, methyl n-butyl ketone, and hexane by ingestion.</i>	December, 2007

APPENDICES

Topics/Chemicals Searched under Project 03-11

IRIS Chemicals for which a literature Screen was performed (Project 03-14)

Chemicals nominated to the IRIS program for FY 2004

Topics/Chemicals Searched under Project 03-11

Topic/Chemical	Date sent to EPA
Uncertainty factors	10/27/04 and 08/24/06
Pentachlorophenol	07/05/05 and 11/09/07
Acrylonitrile	07/14/06, 04/11/08, 08/21/08, and 05/06/09
Thiodiacetic acid	07/11/06
Trichloroacetic acid	07/17/06, 06/07/07, and 09/11/08
1,2-Dichloroethane	11/09/06
Tetrachloroethylene/trichloroacetic acid	11/16/06 and 03/03/09
Effects of chemicals on the elderly	12/15/06
Hexachloroethane	03/05/07
Chloroform	04/03/07 and 05/06/08
Hydrogen cyanide	12/07/07
Nitrobenzene (epidemiology)	01/17/08
Genetic polymorphism of epoxide hydrolase	04/18/08
Cytochrome P450 2E1	04/22/08
Linurin	06/19/08

IRIS Chemicals for which a literature Screen was performed (Project 03-14)

Chemical Name	CAS Number	Screen Date
Acenaphthene	83-32-9	02/08/05
Acenaphthylene	208-96-8	02/08/05
Acephate	30560-19-1	01/27/05
Acetochlor	34256-82-1	07/21/04
Acetone	67-64-1	04/14/05
Acetonitrile	75-05-8	01/01/02
Acetophenone	98-86-2	02/03/05
Acetyl chloride	75-36-5	07/21/04
Acifluorfen (sodium)	62476-59-9	07/21/04
Acrolein	107-28-8	02/03/05
Acrylic acid	79-10-7	02/03/05
Acrylonitrile	107-13-1	01/01/02
Adiponitrile	111-69-3	01/31/05
Alachlor	15972-60-8	07/06/04
Alar	1596-84-5	05/01/07
Aldicarb	116-06-3	01/01/02
Aldicarb sulfone	1646-88-4	11/01/02
Aldrin	309-00-2	02/08/05
Ally	74223-64-6	02/04/05
Allyl alcohol	107-18-6	02/04/05
Allyl chloride	107-05-1	02/04/05
Aluminum phosphide	20859-73-8	08/19/05
Amdro	67485-29-4	02/02/05
Ametryn	834-12-8	02/02/05
4-Aminopyridine	504-24-5	07/05/05
Amitraz	33089-61-1	02/04/05
Ammonia	7664-41-7	07/07/05
Ammonium acetate	631-61-8	01/01/02
Ammonium methacrylate	16325-47-6	07/21/04
Ammonium sulfamate	7773-06-0	02/02/05
Aniline	62-53-3	07/07/05
ortho-Anisidine	90-04-0	02/02/05
Anthracene	53-70-3	07/06/05
Antimony	7440-36-0	08/19/05
Antimony trioxide	1309-64-4	02/02/05
Apollo	74115-24-5	02/02/05
Aramite	140-57-8	02/08/05
Arsenic, inorganic	7440-38-2	01/01/02
Arsine	7784-42-1	03/08/05
Assure	76578-14-8	03/01/05
Asulam	3337-71-1	07/21/04
Atrazine	1912-24-9	07/22/04
Avermectin B1	65195-55-3	03/01/05
Azobenzene	103-33-3	03/02/05
Barium and Compounds	7440-39-3	01/01/02
Barium cyanide	542-62-1	01/01/02
Baygon	114-26-1	03/02/05
Bayleton	43121-43-3	07/22/04
Baythroid	68359-37-5	03/09/05
Benefin	1861-40-1	05/07/07
Benomyl	17804-35-2	03/09/05
Bentazon	25057-89-0	03/02/05
Benz[a]anthracene	56-55-3	03/03/05
Benzaldehyde	100-52-7	03/04/05

Chemical Name	CAS Number	Screen Date
Benzidine	92-87-5	07/26/04
Benzo[b]fluoranthene	205-99-2	03/04/05
Benzo[g,h,i]perylene	191-24-2	03/07/05
Benzo[k]fluoranthene	207-08-9	03/07/05
Benzoic acid	65-85-0	03/24/05
Benzotrichloride	98-07-7	01/14/05
Benzyl chloride	100-44-7	11/01/02
Beryllium and Compounds	7440-41-7	05/01/01
Bidrin	141-66-2	03/08/05
Biphenrin	82657-04-3	03/08/05
1,1-Biphenyl	92-52-4	11/16/05
Bis(2-chloro-1-methylethyl) ether	108-60-1	03/08/05
Bis(2-chloroethoxy)methane	111-91-1	03/08/05
Bis(chloroethyl)ether (BCEE)	111-44-4	08/06/04
Bis(chloromethyl)ether (BCME)	542-88-1	08/06/04
Bisphenol A	80-05-7	03/08/05
Bromate	15541-45-4	11/01/02
Brominated dibenzofurans	N/A	11/01/02
Bromochloromethane	74-97-5	11/01/02
Bromodichloromethane	75-27-4	01/01/02
p-Bromodiphenyl ether	101-55-3	01/01/02
Bromoform	75-25-2	01/01/02
Bromomethane	74-83-9	08/05/04
Bromotrichloromethane	75-62-7	03/29/05
Bromoxynil	1689-84-5	07/07/04
Bromoxynil octanoate	1689-99-2	03/02/06
1,3-Butadiene	106-99-0	05/03/07
n-Butanol	71-36-3	03/29/05
Butyl benzyl phthalate	85-68-7	11/01/02
Butylate	2008-41-5	03/28/05
t-Butylchloride	507-20-0	11/01/02
Butylphthalyl butylglycolate	85-70-1	11/01/02
Cacodylic acid	75-60-5	04/07/05
Calcium cyanide	592-01-8	08/06/04
Caprolactam	105-60-2	08/06/04
Captafol	2425-06-1	04/07/05
Captan	133-06-2	04/12/05
Carbaryl	63-25-2	05/10/05
Carbofuran	1563-66-2	04/07/05
Carbon disulfide	75-15-0	03/28/05
Carbonyl sulfide	463-58-1	04/07/05
Carbosulfan	55285-14-8	04/07/05
Carboxin	5234-68-4	03/28/05
Chloral hydrate	302-17-0	08/05/04
Chloramben	133-90-4	04/07/05
Chlordane (Technical)	12789-03-6	08/09/04
Chlorine	7782-50-5	07/06/05
Chlorine cyanide	506-77-4	11/01/02
Chlorine dioxide	10049-04-4	03/28/05
Chlorite (sodium salt)	7758-19-2	11/01/02
1-Chloro-1,1-difluoroethane	75-68-3	05/01/01
2-Chloroacetophenone	532-27-4	04/11/05
p-Chloroaniline	106-47-8	03/24/05
Chlorobenzene	108-90-7	03/24/05
Chlorobenzilate	510-15-6	04/11/05
1-Chlorobutane	109-69-3	01/01/02
2-Chlorobutane	78-86-4	01/01/02

Chemical Name	CAS Number	Screen Date
Chlorocyclopentadiene	41851-50-7	08/20/04
Chlorodifluoromethane	75-45-6	04/11/05
Chloromethyl methyl ether	107-30-2	11/01/02
beta-Chloronaphthalene	91-58-7	07/23/04
2-Chlorophenol	95-57-8	04/15/05
p-Chlorophenyl methyl sulfide	123-09-1	01/01/02
p-Chlorophenyl methyl sulfone	98-57-7	04/15/05
p-Chlorophenyl methyl sulfoxide	934-73-6	04/15/05
Chlorothalonil	1897-45-6	05/26/05
o-Chlorotoluene	95-49-8	04/15/05
Chlorpropham	101-21-3	05/26/05
Chlorpyrifos	2921-88-2	04/22/05
Chlorsulfuron	64902-72-3	11/04/04
Chromium (III), insoluble salts	16065-83-1	10/12/04
Chromium (VI)	18540-29-9	11/01/02
Chrysene	218-01-9	04/21/05
Coke oven emissions	8007-45-2	05/09/05
Copper cyanide	544-92-3	08/20/04
Creosote	8001-58-9	05/04/07
Crotonaldehyde	123-73-9	08/20/04
Cumene	98-82-8	04/20/05
Cyanazine	21725-46-2	05/01/07
Cyanide, free	57-12-5	07/07/05
Cyanogen	460-19-5	04/25/05
Cyanogen bromide	506-68-3	11/01/02
Cyclohexane	110-82-7	04/20/05
Cyclohexanone	108-94-1	04/20/05
Cyclohexylamine	108-91-8	04/20/05
Cyhalothrin/Karate	68085-85-8	04/20/05
Cypermethrin	52315-07-8	10/12/04
Cyromazine	66215-27-8	08/20/04
Dacthal	1861-32-1	08/20/04
Dalapon, sodium salt	75-99-0	04/20/05
Danitol	39515-41-8	04/22/05
Decabromodiphenyl ether (DBDPE)	1163-19-5	05/06/05
Demeton	8065-48-3	10/12/04
2,4-Diaminotoluene	95-80-7	04/20/05
Diazomethane	334-88-3	08/23/04
Dibenz[a,h]anthracene	53-70-3	05/05/05
Dibenzofuran	132-64-9	04/20/05
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	04/20/05
1,4-Dibromobenzene	106-37-6	11/01/02
Dibromochloromethane	124-48-1	01/01/02
Dibromodichloromethane	594-18-3	01/01/02
p,p'-Dibromodiphenyl ether	2050-47-7	01/01/02
1,2-Dibromoethane	106-93-4	05/16/05
Dibutyl phthalate	84-74-2	05/01/01
Dicamba	1918-00-9	05/09/05
Dichloroacetic acid	79-43-6	06/27/05
3,3'-Dichlorobenzidine	91-94-1	08/23/04
Dichlorodifluoromethane	75-71-8	05/01/01
p,p'-Dichlorodiphenyldichloroethane (DDD or TDE)	72-54-8	08/11/04
p,p'-Dichlorodiphenyldichloroethylene (DDE)	72-55-9	07/13/05
p,p'-Dichlorodiphenyltrichloroethane (DDT)	50-29-3	07/17/05
1,1-Dichloroethane	75-34-3	05/31/05
1,1-Dichloroethylene	75-35-4	11/01/02
cis-1,2-Dichloroethylene	156-59-2	01/01/02

Chemical Name	CAS Number	Screen Date
trans-1,2-Dichloroethylene	156-60-5	01/01/02
Dichloromethane	75-09-2	01/01/02
2,4-Dichlorophenol	120-83-2	10/13/04
4-(2,4-Dichlorophenoxy)butyric acid	94-82-6	06/18/05
2,4-Dichlorophenoxyacetic acid	94-75-7	10/13/04
1,2-Dichloropropane	78-87-5	05/10/05
2,3-Dichloropropanol	616-23-9	01/01/02
1,3-Dichloropropene	542-75-6	05/12/05
Dichlorvos	62-73-7	01/10/05
Dicofol	115-32-2	05/10/05
Dieldrin	60-57-1	05/31/05
Diesel engine exhaust	Not applicable	05/12/05
Diethyl phthalate	84-66-2	05/31/05
Diethyl sulfate	64-67-5	05/10/05
Diethyl-p-nitrophenyl phosphate	311-45-5	01/01/02
Diethylene glycol dinitrate	693-21-0	05/01/01
Difenzoquat	43222-48-6	05/31/05
Diflubenzuron	35367-38-5	05/27/05
1,1-Difluoroethane	75-37-6	11/01/02
Diisopropyl methylphosphonate	1445-75-6	10/13/04
Dimethipin	55290-64-7	05/11/05
Dimethoate	60-51-5	05/10/05
Dimethyl phthalate	131-11-3	05/12/05
Dimethyl sulfate	77-78-1	05/12/05
Dimethyl terephthalate	120-61-6	10/19/04
Dimethylamine	124-40-3	10/19/04
N,N-Dimethylaniline	121-69-7	10/19/04
3,3-Dimethylbenzidine	119-93-7	05/27/05
N,N-Dimethylformamide	68-12-2	07/21/05
2,4-Dimethylphenol	105-67-9	05/27/05
2,6-Dimethylphenol	576-26-1	11/01/02
3,4-Dimethylphenol	95-65-8	01/01/02
4,6-Dinitro-o-cyclohexyl phenol	131-89-5	05/27/05
m-Dinitrobenzene	99-65-0	11/01/02
o-Dinitrobenzene	528-29-0	11/01/02
2,4-Dinitrophenol	51-28-5	11/01/02
2,4-Dinitrotoluene	121-14-2	05/31/05
2,4-/2,6-Dinitrotoluene mixture	N/A	06/02/05
Dinoseb	88-85-7	05/27/05
1,4-Dioxane	123-91-1	11/01/02
Diphenamid	957-51-7	05/31/05
Diphenylamine	122-39-4	05/31/05
1,2-Diphenylhydrazine	122-66-7	01/01/02
Diquat	85-00-7	10/19/04
Disulfoton	298-04-4	07/25/05
1,4-Dithiane	505-29-3	11/01/02
Diuron	330-54-1	07/25/05
Dodine	2439-10-3	10/19/04
Endosulfan	115-29-7	05/09/05
Endothall	145-73-3	06/01/05
Endrin	72-20-8	10/19/04
Epichlorohydrin	106-89-8	06/01/05
1,2-Epoxybutane	106-88-7	06/01/05
Ethephon	16672-87-0	06/01/05
Ethion	563-12-2	05/15/05
2-Ethoxyethanol	110-80-5	01/10/05
Ethyl acetate	141-78-6	11/02/04

Chemical Name	CAS Number	Screen Date
Ethyl carbamate (urethane)	51-79-6	11/02/04
S-Ethyl dipropylthiocarbamate	759-94-4	06/01/05
Ethyl ether	60-29-7	05/01/01
Ethyl p-nitrophenyl phenylphosphorothioate	2104-64-5	06/01/05
Ethylene diamine	107-15-3	06/01/05
Ethylene glycol	107-21-1	04/06/05
Ethylene glycol monobutyl ether (EGBE)	111-76-2	01/01/02
Ethylene thiourea (ETU)	96-45-7	06/01/05
Ethyleneimine	151-56-4	06/01/05
Ethylphthalyl ethylglycolate	84-72-0	01/01/02
Express	101200-48-0	01/14/05
Fenamiphos	22224-92-6	11/03/04
Fluometuron	2164-17-2	06/07/05
Fluoranthene	206-44-0	06/07/05
Fluorene	86-73-7	06/07/05
Fluorine (soluble fluoride)	7782-41-4	08/18/04
Fluridone	59756-60-4	06/17/05
Flurprimidol	56425-91-3	06/07/05
Flutolanil	66332-96-5	06/07/05
Fluvalinate	69409-94-5	06/07/05
Folpet	133-07-3	11/02/04
Fomesafen	72178-02-0	06/07/05
Fonofos	944-22-9	11/02/04
Formic acid	64-18-6	06/17/05
Fosetyl-al	39148-24-8	06/17/05
Furan	110-00-9	06/17/05
Furfural	98-01-1	11/02/04
Furmecyclox	60568-05-0	06/17/05
Glufosinate-ammonium	77182-82-2	11/03/04
Glycidaldehyde	765-34-4	01/01/02
Glyphosate	1071-83-6	06/28/05
Haloxypop-methyl	69806-40-2	06/17/05
Harmony	79277-27-3	06/27/05
Heptachlor	76-44-8	11/17/04
Heptachlor epoxide	1024-57-3	06/27/05
n-Heptane	142-82-5	01/01/02
Hexabromobenzene	87-82-1	05/01/01
Hexabromodiphenyl ether	36483-60-0	11/17/04
Hexachlorobenzene	118-74-1	08/03/05
alpha-Hexachlorocyclohexane	319-84-6	06/28/05
beta-Hexachlorocyclohexane	319-85-7	06/28/05
delta-Hexachlorocyclohexane (delta-HCH)	319-86-8	06/28/05
epsilon-Hexachlorocyclohexane (epsilon-HCH)	6108-10-7	09/22/05
gamma-Hexachlorocyclohexane	58-89-9	07/21/05
technical Hexachlorocyclohexane (t-HCH)	608-73-1	06/28/05
Hexachlorocyclopentadiene (HCCPD)	77-47-4	06/27/05
Hexachlorodibenzo-p-dioxin (HxCDD), mixture of 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD	57653-85-7 and 19408-74-3	11/17/04
Hexachloroethane	67-72-1	11/01/02
Hexachlorophene	70-30-4	06/27/05
1,6-Hexamethylene diisocyanate	822-06-0	06/27/05
n-Hexane	110-54-3	05/01/01
Hexazinone	51235-04-2	08/27/05
Hydrazine/Hydrazine sulfate	302-01-2	07/26/05
Hydrogen chloride	7647-01-0	07/26/05
Hydrogen sulfide	7783-06-4	01/04/08
Hydroquinone	123-31-9	08/11/05

Chemical Name	CAS Number	Screen Date
Imazalil	35554-44-0	02/09/05
Imazaquin	81335-37-7	07/26/05
Indeno[1,2,3-cd]pyrene	193-39-5	03/02/06
Iprodione	36734-19-7	11/17/04
Isobutyl alcohol	78-83-1	07/26/05
Isophorone	78-59-1	07/27/05
Isopropalin	33820-53-0	11/22/04
Isopropyl methyl phosphonic acid (IMPA)	1832-54-8	11/01/02
Isoxaben	82558-50-7	11/17/04
Lactofen	77501-63-4	02/08/05
Lead and compounds (inorganic)	7439-92-1	01/01/02
d-Limonene	5989-27-5	08/11/05
Linuron	330-55-2	08/11/05
Londax	83055-99-6	07/27/05
Malathion	121-75-5	10/05/05
Maleic anhydride	108-31-6	07/27/05
Maleic hydrazide	123-33-1	07/27/05
Maneb	12427-38-2	11/17/04
Manganese	7439-96-5	08/03/05
Mepiquat chloride	24307-26-4	07/27/05
Mercuric chloride	7487-94-7	07/27/05
Mercury, elemental	7439-97-6	07/27/05
Merphos	150-50-5	07/28/05
Merphos oxide	78-48-8	07/28/05
Metalaxyl	57837-19-1	07/28/05
Methacrylonitrile	126-98-7	08/04/05
Methamidophos	10265-92-6	09/20/05
Methidathion	950-37-8	09/25/05
Methomyl	16752-77-5	11/17/04
Methoxychlor	72-43-5	08/10/05
2-Methoxyethanol	109-86-4	07/28/05
Methyl acrylate	96-33-3	07/28/05
Methyl chloride	74-87-3	08/10/05
Methyl chlorocarbonate	79-22-1	11/01/02
Methyl ethyl ketone	78-93-3	08/04/05
Methyl iodide	74-88-4	11/17/04
Methyl isobutyl ketone	108-10-1	08/28/05
Methyl isocyanate	624-83-9	08/24/05
Methyl methacrylate	80-62-6	01/01/02
Methyl parathion	298-00-0	08/29/05
4-(2-Methyl-4-chlorophenoxy) butyric acid	94-81-5	08/06/04
2-(2-Methyl-4-chlorophenoxy)propionic acid (MCP)	93-65-2	08/25/05
2-Methyl-4-chlorophenoxyacetic acid	94-74-6	10/05/05
4,4'-Methylene bis(N,N'-dimethyl)aniline	101-61-1	11/11/04
Methylene diphenyl diisocyanate (monomeric and polymeric)	101-68-8/ 9016-87-9	05/01/01
Methylmercury	22967-92-6	01/01/02
2-Methylnaphthalene	91-57-6	08/29/05
2-Methylphenol	95-48-7	11/03/04
3-Methylphenol	108-39-4	08/24/05
4-Methylphenol	106-44-5	08/24/05
Metolachlor	51218-45-2	08/29/05
Metribuzin	21087-64-9	10/09/05
Molinate	2212-67-1	02/09/05
Molybdenum	7439-98-7	08/25/05
Monochloramine	10599-90-3	11/01/02

Chemical Name	CAS Number	Screen Date
Naled	300-76-5	02/04/05
Napropamide	15299-99-7	11/17/04
Nickel carbonyl	13463-39-3	08/11/04
Nickel refinery dust	N/A	11/01/02
Nickel subsulfide	12035-72-2	08/11/04
Nitrapyrin	1929-82-4	10/09/05
Nitrate	14797-55-8	08/25/05
Nitric oxide	10102-43-9	08/25/05
Nitrite	14797-65-0	08/25/05
Nitrogen dioxide	10102-44-0	08/30/05
Nitroguanidine	556-88-7	11/17/04
p-Nitrophenol	100-02-7	01/12/05
2-Nitropropane	79-46-9	11/03/04
N-Nitroso-di-n-butylamine	924-16-3	11/01/02
N-Nitroso-N-methylethylamine	10595-95-6	11/01/02
N-Nitrosodi-N-propylamine	621-64-7	08/30/05
N-Nitrosodiethanolamine	1116-54-7	08/30/05
N-Nitrosodiethylamine	55-18-5	08/31/05
N-Nitrosodimethylamine	62-75-9	08/29/05
N-Nitrosodiphenylamine	86-30-6	08/30/05
N-Nitrosopyrrolidine	930-55-2	11/17/04
Nonabromodiphenyl ether	63936-56-1	11/01/02
Norflurazon	27314-13-2	11/17/04
NuStar	85509-19-9	09/02/05
Octabromodiphenyl ether	32536-52-0	08/29/05
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	11/01/02
Oryzalin	19044-88-3	11/18/04
Oxadiazon	19666-30-9	10/23/05
Oxamyl	23135-22-0	09/02/05
Oxyfluorfen	42874-03-3	08/30/05
Paclobutrazol	76738-62-0	01/12/05
Paraquat	1910-42-5	09/02/05
Parathion	56-38-2	09/02/05
Pendimethalin	40487-42-1	09/02/05
Pentabromodiphenyl ether	32534-81-9	01/01/02
Pentachlorobenzene	608-93-5	09/16/05
Pentachlorocyclopentadiene	25329-35-5	01/01/02
Pentachloronitrobenzene (PCNB)	82-68-8	12/01/05
Pentafluoroethane	354-33-6	09/16/05
Permethrin	52645-53-1	08/30/05
Phenanthrene	85-01-8	05/01/07
Phenmedipham	13684-63-4	09/19/05
Phenol	108-95-2	08/30/05
m-Phenylenediamine	108-45-2	09/19/05
Phenylmercuric acetate	62-38-4	09/19/05
Phosalone	2310-17-0	01/27/05
Phosmet	732-11-6	09/19/05
Phosphine	7803-51-2	09/19/05
Phosphoric acid	7664-38-2	05/01/01
Phthalic anhydride	85-44-9	09/19/05
Picloram	1918-02-1	09/19/05
Pirimiphos-methyl	29232-93-7	09/21/05
Potassium cyanide	151-50-8	08/30/05
Potassium silver cyanide	506-61-6	08/30/05
Prochloraz	67747-09-5	01/12/05
Prometon	1610-18-0	09/20/05

Chemical Name	CAS Number	Screen Date
Prometryn	7287-19-6	09/21/05
Pronamide	23950-58-5	08/11/05
Propachlor	1918-16-7	12/01/05
Propanil	709-98-8	10/28/05
Propargite	2312-35-8	10/14/05
Propargyl alcohol	107-19-7	10/19/05
Propazine	139-40-2	01/12/05
Propham	122-42-9	10/19/05
Propiconazole	60207-90-1	10/19/05
beta-Propiolactone	57-57-8	10/19/05
Propylene glycol	57-55-6	10/19/05
Propylene glycol monoethyl ether	52125-53-8	05/01/01
Propylene glycol monomethyl ether	107-98-2	04/30/07
Propylene oxide	75-56-9	10/20/05
Propyleneimine	75-55-8	10/20/05
Pursuit	81335-77-5	12/14/05
Pydrin	51630-58-1	05/01/07
Pyrene	129-00-0	05/02/07
Pyridine	110-86-1	05/01/07
Quinalphos	13593-03-8	10/20/05
Quinoline	91-22-5	01/01/02
Quinone	106-51-4	04/30/07
Radium 226, 228	7440-14-4	01/01/02
Radon 222	14859-67-7	01/01/02
Resmethrin	10453-86-8	12/14/05
Rotenone	83-79-4	01/12/05
Savey	78587-05-0	12/14/05
Selenious acid	7783-00-8	01/01/02
Selenium and Compounds	7782-49-2	12/13/05
Selenium sulfide	7446-34-6	10/20/05
Selenourea	630-10-4	01/01/02
Sethoxydim	74051-80-2	11/04/05
Silver	7440-22-4	12/14/05
Silver cyanide	506-64-9	01/01/02
Simazine	122-34-9	11/04/05
Sodium azide	26628-22-8	11/04/05
Sodium cyanide	143-33-9	12/16/05
Sodium diethyldithiocarbamate	148-18-5	11/04/05
Sodium fluoroacetate	62-74-8	11/04/05
Strontium	7440-24-6	01/27/05
Strychnine	57-24-9	11/04/05
Systhane	88671-89-0	11/04/05
Tebuthiuron	34014-18-1	12/13/05
Terbacil	5902-51-2	11/04/05
Terbutryn	886-50-0	12/13/05
Tetrabromodiphenyl ether	40088-47-9	01/01/02
1,2,4,5-Tetrachlorobenzene	95-94-3	10/14/05
Tetrachlorocyclopentadiene	695-77-2	01/01/02
1,1,1,2-Tetrachloroethane	630-20-6	01/01/02
1,1,2,2-Tetrachloroethane	79-34-5	01/01/02
2,3,4,6-Tetrachlorophenol	58-90-2	10/14/05
Tetrachlorovinphos	961-11-5	05/07/07
Tetraethyl lead	78-00-2	10/14/05
Tetraethyldithiopyrophosphate	3689-24-5	10/14/05
1,1,1,2-Tetrafluoroethane	811-97-2	10/14/05
Thallic oxide	1314-32-5	01/01/02
Thallium acetate	563-68-8	11/01/02

Chemical Name	CAS Number	Screen Date
Thallium carbonate	6533-73-9	01/01/02
Thallium chloride	7791-12-0	05/01/01
Thallium nitrate	10102-45-1	01/01/02
Thallium selenite	12039-52-0	11/01/02
Thallium(I) sulfate	7446-18-6	01/01/02
Thiobencarb	28249-77-6	10/14/05
Thiophanate-methyl	23564-05-8	05/07/07
Thiram	137-26-8	11/20/05
2,4-/2,6-Toluene diisocyanate mixture	26471-62-5	12/13/05
Toxaphene	8001-35-2	11/16/05
Tralomehrin	66841-25-6	11/17/05
Triallate	2303-17-5	11/08/05
Triasulfuron	82097-50-5	01/12/05
1,2,4-Tribromobenzene	615-54-3	01/01/02
Tribromochloromethane	594-15-0	11/01/02
Tribromodiphenyl ether	49690-94-0	11/01/02
Tributyltin oxide (TBTO)	56-35-9	11/10/05
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	11/10/05
Trichloroacetic acid	76-03-9	01/01/02
1,2,4-Trichlorobenzene	120-82-1	11/03/04
Trichlorocyclopentadiene	77323-84-3	01/01/02
1,1,1-Trichloroethane	71-55-6	05/01/01
1,1,2-Trichloroethane	79-00-5	11/10/05
Trichlorofluoromethane	75-69-4	11/10/05
2,4,5-Trichlorophenol	95-95-4	11/10/05
2,4,6-Trichlorophenol	88-06-2	11/11/05
2 (2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)	93-72-1	11/11/05
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	93-76-5	11/14/05
1,1,2-Trichloropropane	598-77-6	01/01/02
1,2,3-Trichloropropane	96-18-4	01/01/02
Tricresol	1319-77-3	11/16/05
Tridiphane	58138-08-2	11/16/05
Triethylamine	121-44-8	11/17/05
Triethylene glycol monobutyl ether	143-22-6	01/01/02
Triethylene glycol monoethyl ether	112-50-5	01/01/02
Trifluralin	1582-09-8	11/17/05
2,2,4-Trimethylpentane	540-84-1	05/01/01
1,3,5-Trinitrobenzene	99-35-4	11/16/05
2,4,6-Trinitrotoluene	118-96-7	05/01/01
Uranium, soluble salts	N/A	01/01/02
Vanadium pentoxide	1314-62-1	11/17/05
Vernam	1929-77-7	11/16/05
Vinclozolin	50471-44-8	11/16/05
Vinyl bromide	593-60-2	11/16/05
Vinyl chloride	75-01-4	11/17/05
Warfarin	81-81-2	11/16/05
White phosphorus	7723-14-0	11/01/02
Xylenes	1330-20-7	11/17/05
Zinc cyanide	557-21-1	12/16/05
Zinc phosphide	1314-84-7	08/19/04
Zineb	12122-67-7	01/12/05

**NOMINATION JUSTIFICATIONS
EPA AND PUBLIC
IRIS NOMINATIONS FOR FY 2004**

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
Acenaphthylene (208-96-8) *1991	ORISE lit search of PubMed identified 41 records, none of which appeared to have new, relevant information	None
tert-Amyl ethyl ether (919-94-8)	ORISE lit search of PubMed identified 3 records, none of which appeared to have new relevant information	None
tert-Amyl methyl ether (994-05-8)	ORISE lit screen of PubMed identified 34 records, one of which (Belpoggi et al., 2002) contained substantial supporting material; several TSCATS records appeared to have relevant information	Could change RfD, CSF, WOE
Benzidine (92-87-5) *1995	2001 study of Chinese worker exposure (Phase 1 Lit Screen)	Could change CSF, IUR Unknown Relevance: 4 studies
Benzo(ghi)perylene (191-24-2) *1990	ORISE lit search of PubMed identified 111 records, 1 (Deutsch-Wenzel et al., 1983) of which appeared to have new, relevant information	Could change WOE
Benzothiazole (95-16-9)	ORISE lit search of PubMed identified 213 records, none of which appeared to have relevant information	None

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
Bis(chloroethyl)ether (111-44-4) *1994	1999 IARC monograph characterizes as “not classifiable as to its carcinogenicity to humans; 1998 WHO Environmental Health Criteria document for selected chloroalkyl ethers; 1998-2001 lit screen identified 1993 and 1997 studies that examined the risk of cancer among workers (Phase 1 Lit Screen)	None Unknown relevance: 1 study
Bisphenol A (80-05-7) *1993	1994 study of B6C3F1 mice; 1999 study of Sprague-Dawley CD rats; 2001 study of Crj:CD(SD)IGS rats; 2001 3-generation repro study NOAEL; mutagenicity tests with +/- findings in 1987-2002 literature (Phase 2 Lit Screen)	Could change RfD, could contribute to a WOE Unknown relevance: 20 studies
tert-Butyl alcohol (75-65-0)	ORISE lit search of PubMed records identified 173 records, 8 of which appeared to have new information that could affect values; there is additional supporting material in several TSCATS.	Could change RfD, RfC, WOE, CSF, IUR
Butyl benzenes (n- 104-51-8) (t- 98-06-6)	ORISE lit search of PubMed identified 26 records for n-Butyl benzene, none of which appeared to have relevant information; ORISE lit search of PubMed identified 38 records for t-Butyl benzene, none of which appeared to have relevant information	None
Butyl benzyl phthalate (85-68-7) *1993	1998 Health Canada studies related to developmental toxicity of BBP; search for 1997-2003 identified 11 reproductive and developmental toxicity studies 2000(Phase 3 Lit Screen)	Could change RfD Unknown relevance: 3 studies
Chlorendic acid (115-28-6)	ORISE lit search of PubMed identified 14 records, 1 of which (NTP, 1987) appeared to have new information that could change values; TSCATS: OTS50206428 and OTS50215303 also have some supporting material.	Could change RfD, WOE, RfC, SCF, IUR

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
2-Chloroethyl vinyl ether (mixed) (110-75-8)	ORISE lit search of PubMed identified 22 records, none of which appeared to have relevant information	None
4-Chlorophenyl phenyl ether (7005-72-3)	ORISE lit search of PubMed identified 6 records, none of which appeared to have relevant information	None
Chromium (VI) (18540-29-9) *1998	2000 ATSDR Tox Profile and lit search of 1999-2003 identified 2 studies of genotoxic potential associated with inhalation and 3 studies related to oral exposure (Phase 3 Lit Screen)	Could change WOE Unknown relevance: 2 studies
Compressed natural gas (CNG) engine exhaust	ORISE lit search of PubMed identified 3 records, none of which appeared to have relevant information	None
Dichlorodifluoromethane (75-71-8) *1995	1984-2001 lit search indicates no new studies (Phase 1 Lit Screen)	Unknown relevance: 16 studies
1,2-Dichloroethylene (total) (540-59-0)	ORISE lit search of PubMed identified 48 records, none of which appeared to have relevant information; TSCATS: OTS0557247 had unknown relevance	Unknown relevance: 1 study
1,2-Dichloropropane (78-87-5) *1991	ORISE lit search of PubMed identified 50 records, 6 of which (NTP, 1986; Kirk et al., 1995; Bruckner et al., 1989; Linnett et al., 1988; Thorel et al., 1986; Pozzi et al., 1985) appeared to have relevant information	Could change RfD, RfC, WOE, CSF, IUR
Diisopropyl ether (108-20-3)	ORISE lit search of PubMed identified 50 records, 2 of which (Belpoggi et al., and 2002 Dalbey and Feuston, 1996) appeared to have relevant information	Could change RfD, RfC, WOE, CSF, IUR

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
Dimethyl phthalate (131-11-3) *1994	1986-2003 lit searches identified developmental toxicity studies in rats (1989) and three mutagenicity assays with positive results; 1995 NTP publication reported negative results from a dermal initiation/promotion study and genetic toxicity studies (Phase 3 Lit Screen)	Unknown relevance: 5 studies
Di-n-octyl phthalate (117-84-0)	ORISE lit search of PubMed identified 27 records, 3 (Kaibok et al. (2002); Poon et al. (1997); Heindel et al. (1989)) of which appeared to have relevant information; TSCATS OTS0536209 also appeared to have relevant information	Could change RfD
1,4-Dioxane (123-91-1) *1990	1999 IARC monograph identified a 104-wk DW study in male and female rats; the monograph characterized 1,4-dioxane as group 2B-possibly carcinogenic to humans (Phase 3 Lit Screen)	Could change CSF
Ethyl tertiary butyl ether (ETBE) (637-92-3)	ORISE lit search of PubMed identified 36 records, 2 of which (Medinsky et al., 1999; Dormman et al., 1997), along with TSCATS: OTS0573632; OTS0573631; OTS0558530 appeared to have relevant information	Could change RfC
**Ethylene diaminetetraacetic acid (EDTA) (60-00-4)	ORISE search had 32,424 hits; lit search of PubMed identified 43 records, none of which appeared to have relevant information	None
Gasoline particulate exhaust	ORISE lit search of PubMed identified 50 records, none of which appeared to have relevant information	None
Hexabromocyclododecane (25637-99-4)	ORISE lit search of 0/15 PubMed identified 15 records, none of which appeared to have relevant information; TSCATS: OTS0001424, 2002, and addendum, appeared to have information that could change value	Could change RfD

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
Hexachlorobenzene (118-74-1) *1996	2000 ATSDR Tox Profile; 2001 IARC monograph characterized hexachlorobenzene as 2B; 1989 study of human exposure in Turkey, 3 metabolism studies (1988, 1989, 1990), and other new studies identified; 2000-2003 lit search included 2000 study in Wistar rats investigating promotion of hepatocarcinogenesis, 2001 gavage study of increased proliferation of normal hepatocytes in Fisher 344 rats, and 2002 study of alterations in intercellular gap junctional communication in female rat liver (Phase 3 Lit Screen)	Unknown relevance : 1 study
Hexamethylbenzene (87-54-4)	ORISE lit search of PubMed identified 47 records, 1 of which (Dannenberg and Brachmann, 1970) could have relevant information	Could change CSF, WOE, IUR
1,6,-Hexamethylene diisocyanate (822-06-0) *1994	1998 ATSDR Tox Profile and a lit search for 1997-2002 identified a subchronic, whole body inhalation study (1998) and 2 reproductive/developmental/neurotoxicity studies (2000); 2 genotoxicity studies (1997, 2000) were identified (Phase 2 Lit Screen)	Unknown relevance: 23 studies
2-Hexanone (591-78-6)	ORISE lit search of PubMed identified 500 records, none of which appeared to have relevant information	None
Hydrazine (301-01-2) *1991	1999 IARC monograph identified 3 2-year DW studies in NMRI mice (1990), Wistar rats (1988), and Syrian hamsters (1987); monograph also identified subchronic study in Fisher 344 rats (1999) and a cancer mortality study in male workers (1995); monograph characterized hydrazine as Group 2B (Phase 2 Lit Screen)	Could change CSF and IUR
**Hydrogen peroxide (7722-84-1)	No PubMed lit search; Sr. Toxicologist identified Ito et al., 1981, as a study with information that could change values	Could change CSF, WOE

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
Lead (7349-92-1) *1993	1999 ATSDR Tox Profile identified numerous studies relating exposure to lead in human, rats, and monkeys; EPA IEUBK developed and refined since last IRIS update (Phase 2 Lit Screen)	Could contribute to RfD
Manganese (7439-96-5) *1996	2000 ATSDR Tox Profile and lit screen from 1999-2002 identified developmental and reproductive toxicity studies in rats (1999, 2000) and mice (2001) but insufficient data for MRL; 2000 Tox Profile derived inhalation MRL using BMD approach and cited a longitudinal follow-up study by author of principal RfC and MRL study (1999) and three human health studies; lit screen of 1999-2002 identified additional human studies, including environmental exposure (1999) and neurological effects in workers in the ship and electrical industries (2001) (Phase 2 Lit Screen)	Could change RfC Unknown relevance: 6 studies
4-Methylphenol (106-44-5) *1993	ATSDR Tox Profile (1992), CMA submission, and TSCATS document unpublished developmental toxicity studies in rats and rabbits and 2-generation reproductive toxicity study in rats (Phase 2 Lit Screen)	Could contribute to RfD Unknown relevance: 9 studies
Methoxypropylamine (5332-73-0)	ORISE lit search of PubMed identified 2 records, neither of which had relevant information	None
Naphthalene (91-20-3) *1998	ORISE lit search identified two TSCATS (OTS0513640 and OTS0513641) that appeared to have relevant information	Could change RfD

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
Octabromodiphenyl ether (32536-52-0) *1990	ORISE lit search of PubMed identified 5 records, 2 of which (Hardy (2002) and Carlson (1980) appeared to have relevant information. TSCATS OTS0536688 (1992), OTS0522297 (1990), and OTS0574171 (2001) also appeared to have relevant information 1994 WHO Environmental Health Criteria included a 13-wk study in rats (1987) and teratogenicity studies in rats (1986, 1987) and rabbits (1989); 2001 TSCA 8(e) summaries 90-day inhalation toxicity, NOAEL (Phase 3 Lit Screen)	Could change RfD; RfC Unknown relevance: 5 studies
Octachlorocyclopentene (706-78-5)	ORISE lit search of PubMed identified 1 record, but no relevant information	None
Phthalates (total)	243 PubMed hits. 5 individual phthalates on IRIS. Butyl benzyl-1998 Health Canada studies related to developmental toxicity; search for 1997-2003 identified 11 reproductive and developmental toxicity studies 2000(Phase 3 Lit Screen). Diethyl-1995 ATSDR Tox Profile derived intermediate MRL; 1994-2002 lit screen identified a 120-day DW study (2000) in rats and 2 other studies (2000) evaluating the effects of prenatal exposures in rats; 2-year NTP dermal cancer bioassay (1995) characterized equivocal evidence of carcinogenicity in mice and rats (Phase 2 Lit Screen)	Could change RfD Unknown relevance: more than 12 studies
Polybrominated dioxins and furans (PBDDs and PBDFs) (multiple substances with individual CAS numbers)	ORISE lit search of PubMed identified 84 records, 1 of which (Golka et al., 2000) appeared to have relevant information	Could change RfC

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
Polybrominated diphenyl ethers (PBDEs)	ORISE lit search of PubMed identified 112 records 9 individual PBDEs on IRIS. P-Bromo-1994 WHO Environmental Health Criteria (Phase 2 Lit Screen); Octabromo-1994 WHO Environmental Health Criteria included a 13-wk study in rats (1987) and teratogenicity studies in rats (1986, 1987) and rabbits (1989); 2001 TSCA 8(e) summaries 90-day inhalation toxicity, NOAEL (Phase 3 Lit Screen)	Could change RfD Unknown relevance: more than 40 studies
Polychlorinated naphthalenes (PCNs) (multiple substances with individual CAS numbers)	ORISE lit search of PubMed identified 98 records, one of which (Popp et al., 1997) had relevant information	Could change RfC
Polyhalodioxins and polyhalofurans (multiple substances with individual CAS numbers)	ORISE lit search of PubMed identified 84 records, 2 of which (Golka et al., 2000 and Birnbaum et al., 1991) appeared to have relevant information; Lit screen for HxCDD from 1996 to 2001 identifies a 1997 IARC monograph, extensive literature on chlorinated dibenzodioxins, and EPA's ongoing dioxin reassessment as having information that could change the WOE; 2000 draft EPA dioxin reassessment characterized individual dioxin-like compounds, other than TCDD, as likely human carcinogens (EPA/600/P-00/001Bg).	Could change RfD, RfC, WOE Unknown relevance: 1 study
Polymethacrylic acid (25087-26-7)	ORISE lit search of PubMed identified 62 records, none of which appeared to have relevant information.	None
Tetrabromobisphenol A (70-94-7)	ORISE lit search of PubMed identified 106 records, none of which appeared to have relevant information.	None

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
1,1,2,2,- Tetrachloroethane (79-34-5) *1994	1996 ATSDR Tox Profile presents a chronic oral MRL derived from a 1978 respiratory study in rats; 2000 NCEA Provisional Assessment presents an RfD derived from a 1994 subchronic dietary study in rats and mice; 1,1,2,2-tetrachloroethane characterized as “possible carcinogen” in 1999 IARC monograph and as “not classifiable as to carcinogenicity in humans” in 1992 Health Canada Assessment (Phase 2 Lit Screen)	Unknown relevance: 6 studies
Tetrachloroterephthalic acid (2136-79-0)	ORISE lit search of PubMed identified 2 records, neither of which appeared to have relevant information	None
Total petroleum hydrocarbons (TPH)*	ORISE lit search of PubMed identified 229 records, 3 of which (Maltoni et al., 1997; Wong and Raabe, 1993; Schnatter et al. 1993) appeared to have relevant information	Could change CSF, IUR, WOE
3,5,6-Trichloro-2-pyridinol (TCPy) (6515-38-4)	ORISE lit search of PubMed identified 65 records, 1 of which (Hanley et al., 2000), along with TSCATS: OTS0544559, 1992 and OTS0544561, 1992, could have relevant information	Could change RfD
1,1,2-Trichloroethane (79-00-5) *1995	1989 ATSDR Tox Profile; 1999 IARC monograph says “not classifiable as to carcinogenicity in humans”; 1988-2003 lit screen identified 8 studies that investigated the genotoxicity and/or mutagenicity of 1,1,2 trichloroethane (Phase 3 Lit Screen)	Unknown relevance: 5 studies
Trichlorofluoromethane (75-69-4) *1992	1990 WHO Environmental Health Criteria concluded “little or no mutagenic or carcinogenic potential”; 1984-2002 lit screen identified study to develop, apply, and validate a PBPK model (2001) (Phase 2 Lit Screen)	Unknown relevance: 8 studies

Chemical (CASN) <i>*Last IRIS Update</i>	New Literature	Relevance
2,4,6-Trichlorophenol (88-06-2) *1994	1999 ATSDR Tox Profile for chlorophenols includes intermediate oral MRL and cites a number of epidemiological studies (1981-1991), mainly of farm workers, and concluded that "data were not sufficient to support a causal relationship, but suggested a possible concern"; 1999 IARC monograph says "possibly carcinogenic to humans"	Unknown relevance: 1 study
Tris (1,3-dichloro-2-propyl) phosphate (TDCPP), Fyrol FR-2 (13674-87-8)	ORISE lit search of 2/14 PubMed identified 14 records, 2 of which (Kamata et al., 1989; Tanaka et al., 1981), along with TSCATS: OTS0204911, 1980 and 000002285-0, 1983, appear to have relevant information	Could change RfD, CSR, WOE

RfD=oral reference dose. RfC=inhalation reference concentration. CSF=oral cancer slope factor. IUR=inhalation unit risk. WOE=cancer weight-of-evidence.

NOTE: PubMed searches were conducted for each chemical (except benzo(ghi)perylene, EDTA, and hydrogen peroxide), using the chemical name and the CAS number. If the chemical had more than 50 records in PubMed, the chemical name and CAS number were combined with several terms that describe the types of toxicological studies delineated in IRIS records, and the abstracts were reviewed by a Senior Toxicologist to determine possible relevance. TSCATS records (<http://esc.syrres.com/efdb/tscats.htm>) were also reviewed for all chemicals by the Senior Toxicologist for possible relevance.

* Last IRIS update.

**The number of records in PubMed for benzo(ghi)perylene, EDTA, and hydrogen peroxide were extremely large. With the short deadline for this project, there was not enough time to refine the PubMed searches or to review the abstracts if retrieved. The Senior Toxicologist felt that there was unlikely to be significant toxicological or carcinogenic studies on these chemicals, and so they were only searched on the National Toxicology Program web site and in the TSCATS database.

EPA OFFICE AND REGIONAL IRIS NOMINATIONS FOR FY 2004

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
Acetaldehyde (75-07-7)	4. Assessments should be expedited	ND	RfD: None RfC: 10/91 Cancer: 1/91	OTAQ: Margo T. Oge, Director
◆ Acrylamide (79-06-1)	2. Superfund and RCRA assessments	ND	RfD: 3/91 RfC: 11/90 (message)	Region 4: J. I. Palmer, Jr., Administrator
◆ Aldrin (309-00-2)	2. Superfund and RCRA assessments	(+)	RfD: 3/88 RfC: None Cancer: 7/93	Region 4: J. I. Palmer, Jr., Administrator
Arsenic (inorganic) (7440-38-2)	5. Ongoing update of values needed	(+)	RfD: 2/93 RfC: None Cancer: 4/98	Region 5: Bharat Mathur, Deputy Regional Administrator
Asbestos (1332-21-4)	3. Found in several Region 10 sites 4. Analytical methods used to evaluate asbestos greatly improved since 1996 IRIS profile; assessments should be expedited 5. Updated assessments will allow more accurate characterization of risks posed by sites	ND	RfD: None RfC: None Cancer: 7/93	Region 10: Patricia Cirone, Acting Director, OEA OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor
Azobenzene (103-33-3)	2. Superfund and RCRA assessments	(+)	RfD: None RfC: None Cancer: 7/93	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration
■ Benzo[a]pyrene (50-32-8)	4. Assessments should be expedited	NA	RfD: None RfC: None Cancer: 11/94	OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
Benzidine (92-87-5)	2. Clean Air Act; subject of OAR risk assessment efforts to support standards and to set priorities; high priority for Air Toxics Program 4. CA EPA has proposed noncancer chronic REL 5. New cancer assessment studies available 6. Emitted in large quantities throughout the U.S.	(+)	RfD: 2/95 RfC: 7/91 (message) Cancer: 7/93	OAQPS: Sally Shaver, Director, Emission Standards
Bis(chloroethyl)ether (111-44-4)	2. Superfund and RCRA assessments 5. New assessments should use pharmacokinetic modeling and more stringent criteria to determine whether route extrapolation is appropriate	(-)	RfD: None RfC: 10/91 (message) Cancer: 2/94	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration Region 4: J. I. Palmer, Jr., Administrator
Bisphenol A (80-05-7)	5. Numerous scientific articles published since 1988 IRIS assessment, with some finding effects at concentrations lower than current RfD; NTP Workshop on low-dose effects of endocrine disruptors reviewed some post-1988 studies* (Melnick et al., 2002) 6. Wide spread exposure to bisphenol A in plastics manufacturing	(+)	RfD: 7/93 RfC: None Cancer: None	OPEI: Al McGartland, Director, NCEE
Bromoform (75-25-2)	2. Superfund and RCRA assessments 5. New assessments should use pharmacokinetic modeling and more stringent criteria to determine whether route extrapolation is appropriate	(+)	RfD: 3/91 RfC: 12/93 (message) Cancer: 1/91	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration Region 4: J. I. Palmer, Jr., Administrator
Butyl benzyl phthalate (85-68-7)	2. RCRA hazardous waste identification, corrective action, and persistent/bioaccumulative/toxic programs 5. 2000 report by The Center for Evaluation of Risks to Human Reproduction toxicological review on several phthalates 6. Found in many waste streams and with high volumes	(+)	RfD: 2/93 RfC: None Cancer: 2/93	OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
Cadmium (7440-43-9)	3. Cadmium body burdens are being monitored by CDC in its National Report on Human Exposure to Environmental Chemicals (one of few chemical for which there are measurement in children under 6 years old 4. IRIS consensus review draft assessment in 1999 never completed 5. Recent study shows cadmium can affect the endocrine system; mimics in vivo effects of estrogen in the uterus and mammary gland* (Johnson et al., 2003) 6. Widespread exposure to cadmium in children	ND	RfD: 2/94 RfC: None Cancer: 6/92	OPEI: Al McGartland, Director, NCEE Region 5: Bharat Mathur, Deputy Regional Administrator
Carbon tetrachloride (56-23-5)	2. Superfund and RCRA assessments	ND	RfD: 6/91 RfC: None Cancer: 6/91	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration
◆ Technical Chlordane (12789-03-6)	2. Superfund and RCRA assessments	(-)	RfD: 2/98 RfC: 2/98 Cancer: 2/98	Region 4: J. I. Palmer, Jr., Administrator
Chromium (VI), hexavalent chromium (18540-29-9)	2. High-priority hazardous air pollutant that will be considered for residual risk standards under the Clean Air Act in the next few years 3. Public health groups 5. Current cancer potency estimate derived from exposures to chromium III and chromium VI, underestimating potency of chromium VI by as much as 7-fold; current estimate lower than CalEPA; new study* (Gibb, H.J et al., 2000)	(-)	RfD: 9/98 RfC: 9/98 Cancer: 9/98	OPEI: Al McGartland, Director, NCEE
Compressed natural gas (CNG) engine exhaust	2. Clean Air Act 3. States now examining CNG as alternative to diesel vehicles 4. Current widespread exposure with potential for more	NA	No Record	OTAQ: Margo T. Oge, Director
Dichlorodifluoromethane (75-71-8)	3. State and local governments, industries 6. Substance occurs at approximately 29 Superfund sites	(-)	RfD: 11/95 RfC: None Cancer: None	OSWER: Lee Hofmann, Senior Science Advisor; Dave Crawford

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
◆ p,p'- Dichlorodiphenyltrichloro ethane (DDT) (50-29-3)	2. Superfund and RCRA assessments	(+)	RfD: 2/96 RfC: None Cancer: 5/91	Region 4: J. I. Palmer, Jr., Administrator
1,2-Dichloroethane (107-06-2)	2. Superfund and RCRA assessments 5. New assessments should to use pharmacokinetic modeling and more stringent criteria to determine whether route extrapolation is appropriate	ND	RfD: None RfC: None Cancer: 1/91	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration Region 4: J. I. Palmer, Jr., Administrator
1,2-Dichloroethylene (total) (540-59-0)	2. Substance occurs as a mixture of cis- and trans-isomers and is one of most frequently requested chemicals by risk assessors for Superfund sites 3. State and local governments, industries 5. Carcinogenicity assessment for lifetime exposure last updated in 1991 6. Substance found at approximately 216 Superfund sites; may be of potential risk to children	NA	No Record	OSWER: Lee Hofmann, Senior Science Advisor; Dave Crawford NCEA-Cin: Steve Lutkenhoff, Acting Director

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
◆ 1,2-Dichloropropane (78-87-5)	<p>2. Maximum Contaminant Level (MCL), Safe Drinking Water Act</p> <p>3. Users of groundwater near Superfund and RCRA sites, users of well water near farming areas that use it as a soil fumigant, tribal and other high-end fish-consumers that could harvest contaminated fish, and industries that use it in production of trichloroethylene and other chlorinated chemicals</p> <p>4. ATSDR Minimum Risk Level and OSHA Permissible Exposure Limit for air in the workplace</p> <p>5. Animal studies and reproductive studies cited in ATSDR (1989)</p> <p>6. Recent monitoring data found exceedances of MCL for drinking water in Region 5; no IRIS evaluation of cancer potential has been performed although the MCL is based on potential cancer effects</p>	ND	RfD: None RfC: 12/91 Cancer: None	Region 5: Bharat Mathur, Deputy Regional Administrator
◆ Dieldrin (60-57-1)	2. Superfund and RCRA assessments	(-)	RfD: 9/90 RfC: None Cancer: 7/93	Region 4: J. I. Palmer, Jr., Administrator
Diethyl phthalate (84-66-2)	<p>2. RCRA hazardous waste identification, corrective action, and persistent/bioaccumulative/toxic programs</p> <p>5. 2000 report by The Center for Evaluation of Risks to Human Reproduction toxicological review on several phthalates</p> <p>6. Found in many waste streams and with high volumes</p>	(+)	RfD: 2/93 RfC: None Cancer: 2/93	OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor
Dimethyl phthalate (131-11-3)	<p>2. RCRA hazardous waste identification, corrective action, and persistent/bioaccumulative/toxic programs</p> <p>5. 2000 report by The Center for Evaluation of Risks to Human Reproduction toxicological review on several phthalates; 1995 NTP study on diethyl phthalate</p> <p>6. Found in many waste streams and with high volumes</p>	(+)	RfD: 3/94 RfC: 10/90 Cancer: 2/93	OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
Di-n-octyl phthalate (117-84-0)	2. RCRA hazardous waste identification, corrective action, and persistent/bioaccumulative/toxic programs 5. 2000 report by The Center for Evaluation of Risks to Human Reproduction toxicological review on several phthalates 6. Found in many waste streams and with high volumes	NA	No Record	OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor
2,6-Dinitrotoluene (606-20-2)	2. Superfund and RCRA assessments	NA	No Record	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration
Ethanol (64-17-5)	4. Assessment should be expedited	NA	No Record	OTAQ: Margo T. Oge, Director
Ethyl tertiary butyl ether (ETBE) (637-92-3)	2. Congressional mandate; Clean Air Act 3. State and local governments 6. Exposure could be ubiquitous	NA	No Record	OTAQ: Margo T. Oge, Director
Formaldehyde (50-00-0)	4. Assessment should be expedited	ND	RfD: 9/90 RfC: None Cancer: 5/91	OTAQ: Margo T. Oge, Director Region 5: Bharat Mathur, Deputy Regional Administrator
Gasoline particulate exhaust	2. Clean Air Act 3. State governments for PM implementation plans 4. Limited, preliminary data from Lovelace Respiratory Research Institute tests 6. Widespread exposure; contributes about 10% of total ambient particulate	NA	No Record	OTAQ: Margo T. Oge, Director
◆ Heptachlor (76-44-8)	2. Superfund and RCRA assessments	(-)	RfD: 3/91 RfC: None Cancer: 7/93	Region 4: J. I. Palmer, Jr., Administrator

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
◆ Heptachlor epoxide (1024-57-3)	2. Superfund and RCRA assessments	(-)	RfD: 3/91 RfC: None Cancer: 7/93	Region 4: J. I. Palmer, Jr., Administrator
▲ Hexabromocyclododecane (25637-99-4)	3. The pentaBDE ban has heightened awareness of all brominated flame retardants. Like pentaBDE, HBCD meets the criteria of persistence, bioaccumulative, toxic, and long-range transport as applied in the international POPs treaty 4. NAS hazard assessment, Toxicological Risks of Selected Flame-Retardant Chemicals, 2000 6. HBCD has been found in human serum and breast milk. Liver affects have been observed after repeated exposures, according to Dr. Linda Birnbaum, Director of NHEERL's Experimental Toxicology Division	NA	No Record	OPEI: Al McGartland, Director, NCEE
◆ Hexachlorobenzene (118-74-1)	2. Superfund and RCRA assessments	(-)	RfD: 4/91 RfC: 3/91 Cancer: 11/96	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration Region 4: J. I. Palmer, Jr., Administrator
Hexachlorobutadiene (87-68-3)	2. Superfund and RCRA assessments	ND	RfD: 5/93 (withdrawn) RfC: None Cancer: 4/91	Region 4: J. I. Palmer, Jr., Administrator
◆ alpha-Hexachlorocyclohexane (319-84-6)	2. Superfund and RCRA assessments	(+)	RfD: None RfC: None Cancer: 7/93	Region 4: J. I. Palmer, Jr., Administrator
◆ beta-Hexachlorocyclohexane (319-85-7)	2. Superfund and RCRA assessments	(+)	RfD: None RfC: None Cancer: 7/93	Region 4: J. I. Palmer, Jr., Administrator
◆ technical-Hexachlorocyclohexane (608-73-1)	2. Superfund and RCRA assessments	(-)	RfD: None RfC: None Cancer: 7/93	Region 4: J. I. Palmer, Jr., Administrator

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
Hexachlorodibenzo-p-dioxin, mixture (HxCDD) (19408-74-3)	2. Superfund and RCRA assessments	(+)	RfD: None RfC: None Cancer: 3/91	Region 4: J. I. Palmer, Jr., Administrator
Hexachloroethane (67-72-1)	2. Superfund and RCRA assessments	(+)	RfD: 4/91 RfC: 12/92 Cancer: 2/94	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration
1,6-Hexamethylene diisocyanate (822-06-0)	2. Clean Air Act; subject of OAR risk assessment efforts; high priority for Air Toxics Program 6. Airborne emissions at levels that may be of concern	(+)	RfD: None RfC: 9/94 Cancer: None	OAQPS: Sally Shaver, Director, Emission Standards
2-Hexanone (591-78-6)	2. RCRA, Hazardous Waste Identification Rule (HWIR) 4. NCEA-Cin developed RfD and RfC provisional toxicity values currently undergoing peer review 5. Substance likely to have new data 6. Substance found at approximately 70 Superfund sites	NA	No Record	OSWER: Lee Hofmann, Senior Science Advisor; Dave Crawford NCEA-Cin: Steve Lutkenhoff, Acting Director
Hydrazine (301-01-2)	2. Clean Air Act (one of 33 Urban Air Toxics identified); OAR risk assessment efforts to support standards and set priorities 4. CA EPA has adopted a noncancer chronic REL 5. New studies identified; new RfC methodology 6. Potential exposures in ambient air	(+)	RfD: None RfC: None Cancer: 4/91	OAQPS: Sally Shaver, Director, Emission Standards

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
Lead (7349-92-1)	<p>3. State and local governments; local, state, and national organizations; high priority internationally for children's health groups</p> <p>4. Appendix G of EPA <i>The Benefits and Costs of the Clean Air Act, 1970 to 1990</i> dose-response assessment reviewed by SAB not included in IRIS file*</p> <p>5. Assessments should reflect the current use of the adult and children's lead models</p> <p>6. Found at many Superfund sites--an important health issue</p>	(+)	<p>RfD: 2/91 (message)</p> <p>RfC: None</p> <p>Cancer: 11/93</p>	<p>OSWER: Lee Hofmann, Senior Science Advisor</p> <p>Region 2: Roland B. Hemmett Science Advisor</p> <p>Region 10: Patricia A. Cirone, Acting Director, OEA</p> <p>OPEI: Al McGartland Director, NCEE</p>
Manganese (7439-96-5)	<p>2. Section 112(f) of 1990 CAA requires EPA to perform residual risk assessment on Ferroalloy Manufacturing Facility MACT; manganese emissions higher than current inhalation RfC</p> <p>3. State and local governments, particularly Marietta, OH, communities adjacent to Ferroalloy</p> <p>4. EPA and ATSDR assessments on manganese compounds</p> <p>5. New studies* (Mergler et al., 1999 and Hudnell, 1999)</p> <p>6. Substance found at approximately 429 Superfund sites; 2003 RSEI and NATA indicate that manganese is likely to be health risk in Region 5</p>	(+)	<p>RfD: 5/96</p> <p>RfC: 12/93</p> <p>Cancer: 12/96</p>	<p>OSWER: Lee Hofmann, Senior Science Advisor; Dave Crawford</p> <p>Region 5: Bharat Mathur, Deputy Regional Administrator</p>
Methylene chloride (75-09-2)	<p>5. Ongoing update of values needed</p>	(+)	<p>RfD: 3/88</p> <p>RfC: 9/91</p> <p>Cancer: 2/95</p>	Region 5: Bharat Mathur, Deputy Regional Administrator
4-Methylphenol (106-44-5)	<p>3. State and local governments, industries</p> <p>6. Substance found at approximately 90 Superfund sites</p>	(+)	<p>RfD: 8/93 (withdrawn)</p> <p>RfC: 4/92 (message)</p> <p>Cancer: 8/91</p>	OSWER: Lee Hofmann, Senior Science Advisor; Dave Crawford

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
Methyl tert-butyl ether (MTBE) (1634-04-4)	4. Assessment should be expedited	ND	RfD: 3/93 RfC: 9/93 Cancer: None	OTAQ: Margo T. Oge, Director
■ ♦ Naphthalene (91-20-3)	3. State and local governments, industries 4. Currently under assessment for cancer only 6. Substance found at approximately 320 Superfund sites	ND	RfD: 9/98 RfC: 9/98 Cancer: 9/98	OSWER: Lee Hofmann, Senior Science Advisor, Dave Crawford
▲ Octabromodiphenyl ether (octaBDE) (32536-52-0)	3. Ban on manufacture/use will take place in Europe in July 2004 and in California in January 2008 4. Draft ATSDR Toxicological Profile for Polybrominated Biphenyls and Polybrominated Diphenyl Ethers (PCBs and PBDEs), September 2000 at http://www.atsdr.cdc.gov/toxprofiles/tp68.html ; 2001 NTP Review of Toxicological Literature for octaBDE and other PBDEs; some studies conducted since the last IRIS assessment of octaBDE 4. IRIS assessment of other brominated diphenyl ethers initiated in FY 03, but OctaBDE was omitted	(+)	RfD: 8/90 RfC: None Cancer: 8/90	OPEI: Al McGartland, Director, NCEE
Perchlorate (14797-73-0)	2. Superfund and RCRA assessments	NA	No Record	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration
Phthalates	2. Superfund and RCRA assessments See entry under specific chemical listing (alphabetized)	(+)	These individual phthalates are on IRIS: butyl benzyl (85-68-7) RfD: 2/93 RfC: None Cancer: 2/93	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
	See entry under specific chemical listing (alphabetized)	ND	di (2-ethyl hexyl) (117-81-7) RfD: 5/91 RfC: None Cancer: 2/93	OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor
		(+)	dibutyl (84-72-2) RfD: 8/90 RfC: 10/90 Cancer: 2/93	
	See entry under specific chemical listing (alphabetized)	(+)	diethyl (84-66-2) RfD: 2/93 RfC: None Cancer: 2/93	
		(+)	dimethyl (131-11-3) RfD: 3/94 RfC: 10/90 Cancer: 2/93	OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor
Polybrominated biphenyls (PBBs) 67774-32-7	2. Superfund and RCRA assessments	NA	No Record	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
▲ Polybrominated diphenyl ethers (PBDEs)	2. Superfund and RCRA assessments 5. ORD/Regional workshop presentations on Emerging Pollutants 6. Significant issue in Great Lakes ecosystem	(-)	These individual BDEs are on IRIS: <i>p</i> -bromo- (101-55-3) RfD: None RfC: None Cancer: 8/90	Region 2: Roland B. Hemmett, Science Advisor Region 10: Patricia A. Cirone, Acting Director, OEA
		(-)	<i>p,p</i> -dibromo- (2050-47-7) RfD: None RfC: None Cancer: 8/90	
		(-)	tribromo- (49690-94-0) RfD: None RfC: None Cancer: 8/90	
		(-)	tetrabromo- (40088-47-9) RfD: None RfC: None Cancer: 8/90	
▲ Polybrominated diphenyl ethers (PBDEs) (continued)		(-)	pentabromo- (32534-81-9) RfD: 8/90 RfC: None Cancer: 8/90	

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
	See entry under specific chemical listing (alphabetized)	(-) (+) (-) (+)	hexabromo- (36483-60-0) RfD: None RfC: None Cancer: 8/90 octabromo- (32536-52-0) RfD: 8/90 RfC: None Cancer: 8/90 nonabromo- (63936-56-1) RfD: None RfC: None Cancer: 8/90 decabromo- (1163-19-5) RfD: 2/95 RfC: None Cancer: 1/90	OPEI: Al McGarland, Director, NCEE
● Polychlorinated Biphenyls (PCBs) (1336-36-3)	2. Superfund and RCRA Corrective Action site assessments	ND	RfD: 6/94 (message) RfC: None Cancer: 8/90	Region 4: J.I. Palmer, Jr. Regional Administrator Region 1: Susan Studlien, Acting Director, Office of Site Remediation and Restoration

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
<p>Mono-, Di, Tri, Ortho chlorinated homologues</p> <p>PCBs (noncancer) including Aroclors 1016 (12674-11-2) and Aroclor 1254 (11097-69-1)</p>	<p>3. US EPA regions, states, industry and citizens</p> <p>4. ORD/NCEA has reviewed the partitioning of the PCB homologues in different media; RCRA Combustion Guidance has mandated that homologue data from hazardous waste BIFs be evaluated as an Aroclor mixture</p> <p>5. Mobility of PCBs in sediments differs according to their level of chlorination; highly chlorinated components bioaccumulate</p> <p>6. Wildlife and human receptors exposed to PCBs released to river systems; "weathering" alters the spectrum of components</p> <p>3. Mixtures are a priority at sites within the nominating regions</p> <p>4. Assessments should be expedited</p> <p>6. Toxicity values for the specified mixtures are likely to be outdated</p>	ND	<p>RfD: 11/96</p> <p>RfC: None</p> <p>Cancer: None (for both mixtures)</p>	<p>OSWER: Lee Hofman, Senior Science Advisor; Timothy Taylor</p> <p>Region 2: Roland Hemmett, Science Advisor</p> <p>Region 10: Patricia Cirone, Acting Director, Office of Environmental Assessment</p>

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
■ Polycyclic Aromatic Hydrocarbons (PAHs) as a mixture	4. Assessments should be expedited	NA	No Record	<p>OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor</p> <p>Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration</p> <p>Region 2: Roland B. Hemmett, Science Advisor</p> <p>Region 10: Patricia A. Cirone, Acting Director, OEA</p>
▲ Tetrabromobisphenol A (70-94-7)	<p>3. Brominated flame retardants, such as pentaBDE have been studied in Europe and California; like pentaBDE, the compound has been detected in air, sediment, sewage, and sludge and is highly lipophilic; the ban of pentaBDE has heightened awareness</p> <p>4. Some European Union studies possible</p> <p>6. Dr. Linda Birnbaum, NHEERL, presentation: TBBPA is immunotoxic, affects thyroid hormones, inhibits estrogen clearance, and is toxic to primary hepatocytes and inhibits CYP2C9</p>	NA	No Record	<p>OPEI: Al McGartland, Director, NCEE</p>

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
Tetrachlorodibenzodioxin (Dioxin or TCDD) (1746-01-6)	2. Superfund and RCRA assessments	NA	No Record	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration
1,1,1,2-Tetrachloroethane (630-20-6)	2. Superfund and RCRA assessments 5. New assessments should use pharmacokinetic modeling and more stringent criteria to determine whether route extrapolation is appropriate	(-)	RfD: 12/96 RfC: None Cancer: 1/91	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration Region 4: J. I. Palmer, Jr., Administrator
1,1,2,2-Tetrachloroethane (79-34-5)	2. Clean Air Act; Air Toxics Program; Superfund and RCRA assessments 4. ATSDR oral MRL 5. New assessments need to use pharmacokinetic modeling and more stringent criteria to determine whether route extrapolation is appropriate; new RfC and application of inhalation dosimetry needed 6. Potential exposure to emissions in ambient air	(+)	RfD: None RfC: None Cancer: 2/94	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration Region 4: J. I. Palmer, Jr., Administrator OAQPS: Sally Shaver, Director, Emission Standards

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
Tetrachloroethene (TCE) [Perchloroethylene PCE] 127-18-4	2. Superfund and RCRA assessments	ND	RfD: 3/88 RfC: None Cancer: None	OSWER: Lee Hofmann, Senior Science Advisor, Dave Crawford Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration Region 2: Roland B. Hemmett, Science Advisor Region 5: Bharat Mathur, Deputy Regional Administrator Region 10: Patricia A. Cirone, Acting Director, OEA
Total Petroleum Hydrocarbons (TPH)	3. State and local governments, DOD, DOE, citizens 4. Toxicity data available on about 95 of 250 components and only 25 of these have EPA toxicity values or sufficient data to develop toxicity criteria; NCEA risk assessment issue paper <i>Approaches to and Provisional Guidance for Risk Assessment of Total Petroleum Hydrocarbons</i> 5. TPH mixture not evaluated as a whole, but components, such as alkanes, alkenes, and various aromatic compounds have been evaluated 6. Environmental contamination by TPH is widespread initially in the form of crude oil, various fuels to lubricating oils	NA	No Record	OSWER: Lee Hofmann, Senior Science Advisor; Timothy Taylor

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
◆ Toxaphene (8001-35-2)	2. Superfund and RCRA assessments	(+)	RfD: None RfC: None Cancer: 1/91	Region 4: J. I. Palmer, Jr., Administrator
1,1,2-Trichloroethane (79-00-5)	2. Superfund and RCRA assessments 5. New assessments need to use pharmacokinetic modeling and more stringent criteria to determine whether route extrapolation is appropriate	(-)	RfD: 2/95 RfC: 12/92 Cancer: 2/94	Region 4: J. I. Palmer, Jr., Administrator Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration
Trichloroethylene (TCE) (79-01-6)	3. Substance found at a significant number of regional sites 4. Assessments should be expedited	ND	RfD: 8/92 RfC: None Cancer: 7/89 (withdrawn)	Region 2: Roland B. Hemmett, Science Advisor Region 10: Patricia A. Cirone, Acting Director, OEA
Trichlorofluoromethane (75-69-4)	3. State and local governments, industries 5. Oral RfD last update in 1992 6. Substance found at approximately 63 Superfund sites	(+)	RfD: 8/92 RfC: None Cancer: None	OSWER: Lee Hofmann, Senior Science Advisor; Dave Crawford
2,4,6-Trichlorophenol (88-06-2)	2. Superfund and RCRA assessments 5. Reevaluate to derive most appropriate inhalation toxicity value	(+)	RfD: None RfC: 7/91 (message) Cancer: 2/94	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration Region 4: J. I. Palmer, Jr., Administrator

Chemical Nomination (CASN)	Nomination Justifications	Literature Screening Results **	Latest IRIS Assessment	Respondent/Affiliation
◆ 3,5,6-Trichloro-2-pyridinol (TCPy) (6515-38-4)	5. New studies suggest alternative mechanism in pesticide induced inhibition (Das, KP, 1999); studies in rats (Adgate et al., 2001) show TCPy in urine as a biomarker; (Fenske et al., 2002) studies indicate higher urinary levels of TCPy in children exposed to pesticides* 6. TCPy is the primary metabolite of chlorpyrifos and chlorpyrifos-methyl and has been documented as a metabolite of another pesticide, triclopyr. TCPy is stable, so body burdens may represent total intake of both "environmental" and parent compounds	NA	No Record	OPEI: Al McGartland, Director, NCEE
1,2,4-Trimethylbenzene (95-63-6)	2. Superfund and RCRA assessments	NA	No Record	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration
1,3,5-Trimethylbenzene (108-67-8)	2. Superfund and RCRA assessments	NA	No Record	Region 1: Susan Studlien, Acting Director of Site Remediation and Restoration
▲ Tris (1,3-dichloro-2-propyl) phosphate (TDCPP), Fyrol FR-2 (13674-87-8)	3. TDCPP is used as a substitute for pentaBDE(which will be phased out) as a flame retardant in flexible polyurethane foams, so exposure is widespread; foam manufacturers will want an assessment 4. NAS, Toxicological Risks of Selected Flame-Retardant Chemicals, 2000 6. Current use in polyurethane foam in furniture means exposure is most likely widespread; with phase-out of pentaBDE, it is anticipated that exposure will increase; agency toxicologists have expressed concern over the potential hazards of this chemical	NA	No Record	OPEI: Al McGartland, Director, NCEE
Vinyl chloride (75-01-4)	5. Recent occupational studies should be used to update current assessment * (Reference table of relevant citations)	(-)	RfD: 8/2000 RfC: 8/2000 Cancer: 8/2000	OPEI: Al McGartland, Director, NCEE

PUBLIC NOMINATIONS FOR NEW IRIS ASSESSMENT FOR FISCAL YEAR 2004

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
Acenaphthylene (208-96-8)2	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 5. IRIS file does not provide cancer slope factor or Oral RfD 6. Chemical is permitted for discharge in NY state waters		RfD: None RfC: None Cancer: 1/91	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit Montana DEQ: Christian J. Levin, Water Quality Spec
Acetochlor (34256-82-1)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 5. IRIS file does not provide cancer slope factor 6. Found in groundwater in New York State (Long Island - sole source aquifer for 3 million people); chemical does not have state or EPA criteria for human health	(+)	RfD: 9/93 RfC: None Cancer: None	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Alachlor ESA (CAS No. not available)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Found in groundwater in New York State (Long Island - sole source aquifer for 3 million people); does not have state or EPA criteria for human health		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Alachlor OA (CAS No. not available)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Found in groundwater in New York State (Long Island - sole source aquifer for 3 million people); does not have state or EPA criteria for human health		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Amorphous Silica Gel, Silica Aerogel (62231-67-4)	2. Clean Air Act 3. State governments (CA has registered as pesticide and also lists as a known human carcinogen 4. CA EPA		No Record	El Dorado Conty Taxpayers for Quality Growth: Steven Proe Oak Creek, Inc.: James S. Smithe, Jr., President

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
tert-Amyl alcohol (TAA) (75-85-4)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Potential replacement for MTBE as gasoline oxygenate in New York State; groundwater concern; does not have state or EPA criteria for human health		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
tert-Amyl ethyl ether (TAEE; 4,4-dimethyl-3-oxahexane) (919-94-8)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Potential replacement for MTBE as gasoline oxygenate in New York State; groundwater concern; does not have state or EPA criteria for human health		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
tert-Amyl methyl ether (TAME) (994-05-8)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Currently in use as replacement for MTBE as gasoline oxygenate in New York State; groundwater concern; does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Benzo(ghi)perylene (191-24-2)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 5. IRIS file does not provide cancer slope factor or Oral RfD. 6. Chemical is permitted for discharge to New York State waters ,but does not have state or EPA criteria for human health		RfD: None RfC: None Cancer: 12/90	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit Montana DEQ: Christian J. Levin, Water Quality Spec
Benzothiazole (95-16-9)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards IRIS file does not provide cancer slope factor or Oral RfD. 6. Chemical is permitted for discharge to New York State waters; does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
tert-Butyl alcohol (TBA; 2-methyl-2-propanol) (75-65-0)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards IRIS file does not provide cancer slope factor or Oral RfD.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
	6. Likely replacement for MTBE as gasoline oxygenate; degradate of MTBE; Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.			
Butylbenzenes (alkylated monoaromatics)	3. States and industries would benefit from better human health assessments 4. Need RfDs 5. Effects from low-level exposures, such as hormesis 6. Wide spread exposures		No Record	Rick A. Mills, Human Health Risk Consultant
Chlorendic acid (115-28-6)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards IRIS file does not provide cancer slope factor or Oral RfD. 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
2-Chloroethyl vinyl ether (mixed) (110-75-8)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards IRIS file does not provide cancer slope factor or Oral RfD. 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
4-Chlorophenyl phenyl ether (7005-72-3)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards IRIS file does not provide cancer slope factor or Oral RfD. 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Clopyralid (1702-17-6)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Groundwater concern in New York State. Chemical does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Cyanazine	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards	(+)	RfD: 3/96 (withdrawn) RfC: None	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
(21725-46-2)	5. Oral RfD was withdrawn from existing IRIS file in 1992; new RfD needed 6. Groundwater and surface water concern in New York State. Chemical does not have state or EPA criteria for human health.		Cancer: 7/93	
Desethyl atrazine (DEA; deethyl atrazine) (6190-65-4)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Environmental degradate of atrazine; found in groundwater on New York State's Long Island (sole-source aquifer to 3 million people); Chemical does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Desisopropyl atrazine (DIA; desethylsimazine; deisopropylatrazine) (1007-28-9)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Environmental degradate of atrazine and simazine; found in groundwater on New York State's Long Island (sole-source aquifer to 3 million people); Chemical does not have state or EPA criteria for human health.	Not on IRIS	No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Diaminochlorotriazine (DACT; diaminosimazine; didealkylatrazine) (3397-62-4)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Environmental degradate of atrazine and simazine; found in groundwater on New York State's Long Island (sole-source aquifer to 3 million people); Chemical does not have state or EPA criteria for human health.	Not on IRIS	No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Dibenzofuran (132-64-9)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 5. IRIS file does not provide cancer slope factor or oral RfD. 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health	(+)	RfD: None RfC: 5/92 Cancer: 10/90	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Dichlobenil (1194-65-6)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
	6. Found in groundwater in New York State (Long Island - sole source aquifer for 3 million people); Chemical does not have state or EPA criteria for human health.			
Diisopropyl ether (DIPE) (108-20-3)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Potential replacement for MTBE as gasoline oxygenate in New York State; groundwater concern; permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
1, 4-dioxane (123-91-1)	2. Superfund/CERCLA 3. Federal, state, and local governments; industries 4. New literature cited indicating late 1980s cancer slope factor based on flawed data 5. PBPK model; new carcinogen risk assessment guidelines 6. Widespread, cross-media exposure		RfD: None RfC: None Cancer: 9/90	ARCADIS: Julie A. Stickney, Principal Toxicologist U.S. Air Force: George Warner, Environmental Engineer Celanese Corporation: Steve Olp, Sr. Remediation Manager
Disulfoton sulfone (2497-06-5)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Found in groundwater in New York State (Long Island - sole source aquifer for 3 million people) and thus a groundwater concern. Chemical does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Endosulfan sulfate (1031-07-8)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Groundwater and surface water concern in New York State. Chemical does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
Ethofumesate (26225-79-6)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Found in groundwater in New York State (Long Island - sole source aquifer for 3 million people) and thus a groundwater concern. Chemical does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Ethylene diaminetetraacetic acid (EDTA) (60-00-4)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Ethyl tert-butyl ether (ETBE) (637-92-3)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Likely replacement for MTBE as gasoline oxygenate; groundwater concern in New York State. Does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Hexamethylbenzene (CAS No. 87-54-0)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Hydrogen peroxide (CAS No. 7722-84-1)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Imidacloprid (13826-41-3)	2. Clean Water Act, Safe Drinking Water Act 3. NY State Water Quality Standards 6. Found in groundwater in New York State (Long Island - sole source aquifer for 3 million people). Widely used on Long Island; soluble in water, mobile in soil, resists degradation. Chemical does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
Methoxypropylamine (5332-73-0)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Methylene Chloride (75-09-02)	5. Long, selected bibliography sent		No Record	Eastman Kodak Company: Derek Guest, Director, Issues Management
1-Methylnaphthalene (90-12-0)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA		No Record	Montana DEQ: Christian J. Levin, Water Quality Spec.
2-Methylnaphthalene (90-57-6)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA		No Record	Montana DEQ: Christian J. Levin, Water Quality Spec.
s-Metolachor (87392-12-9)	3. State governments 4. OPP TRED in 2002 5. New information available in OPP TRED, 2002 6. Widespread us as herbicide		No Record	Syngenta Crop Protection: Greg Watson, NAFTA Herbicide Team Leader
Octachlorocyclo-pentene (706-78-5)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Paraquat dichloride (1,1'- dimethyl-4,4'- bipyridinium dichloride) (1910-42-5)	3. State governments 4. OPP RED in 1997 and 2001 risk assessment 5. Cancer Data/Mode of Action in 1997 OPP RED	(+)	RfD: 2/91 RfC: None Cancer: 10/93	Syngenta Crop Protection: Jerry Wells, Regulatory Product Manager
Perchlorate (14797-73-0)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 4. EPA Draft Peer Review Assessment, 2002.		No Record	Montana DEQ: Christian J. Levin, Water Quality Spec.
Phenanthrene (85-01-8)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA		RfD: None RfC: 9/94 Cancer: 12/90	Montana DEQ: Christian J. Levin, Water Quality Spec.

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
Polybrominated dioxins and furans (PBDDs and PBDFs) (multiple substances with individual CAS numbers)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 4. IRIS entry for brominated dibenzo-furans provides no oral RfD or cancer slope factor 6. Produced from the manufacture and combustion of PBDEs and other bromine-containing compounds. Large amounts of PBDD/PBDFs were found in the dust and ash from the World Trade Center in New York City, and pre-9-11-01 in New York Harbor sediments and suspended sediments. Chemicals do not have state or EPA criteria for human health.	PBDDs not on IRIS.	No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Polybrominated diphenyl ethers (PBDEs) (multiple substances with individual CAS numbers)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. PBDEs are widely found and increasing in fish and surface waters and the human body; many congeners are expected to be both toxic and highly bioaccumulative. Chemicals do not have state or EPA criteria for human health.	Not on IRIS except for a few congeners, which have little information	No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Polychlorinated biphenylenes (PCBPs) (multiple substances with individual CAS numbers) PCBs (1336-36-3)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. PCBPs were reported from the ashes of the World Trade Center and Binghamton (NY) State Office building, and found pre-9-11-01 in New York Harbor sediments and suspended sediments. Chemicals do not have state or EPA criteria for human health.	PCBs on IRIS	RfD: 6/94 (message) RfC: None Cancer: 6/97	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Polychlorinated naphthalenes (PCNs) (multiple substances with individual CAS numbers)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. Dioxin-like properties of PCNs raise toxicity concerns. Previously manufactured and used for the same applications as were PCBs including dielectrics and waxes. Also, are trace contaminants in PCBs. These chemicals do not have state or EPA criteria for human health. WHO has proposed TEFs relating PCNs to 2,3,7,8-		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
	TCDD.			
Polyhalodioxins and polyhalofurans (multiple substances with individual CAS numbers)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. Suspected of having toxicity similar to PCDDs/PCDFs; Chemicals do not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Polymethacrylic acid (25087-26-7)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Potassium permanganate (7722-64-7)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. Chemical is permitted for discharge to New York State waters but does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Propamcarb HCL (25606-41-1)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. Groundwater concern in New York State. Chemical does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Propoxur (4812-20-8)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. Groundwater concern in New York State. Chemical does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Tetrachloroterephthalic acid (TCPA) (2136-79-0)	2. Clean Water Act, Safe Drinking Water Act, Superfund/CERCLA 3. NY State Water Quality Standards 6. Found at high levels in groundwater in New York State (Long Island - sole source aquifer for 3 million people); Chemical does not have state or EPA criteria for human health.		No Record	NYSDEC: Scott Stoner, Chief, Standards and Classifications Unit
Tremolite/actinolite asbestos (amphibole)	2. Clean Air Act; Super Fund/CERCLA 3. State governments and local governments; the American Lung		No Record	American Lung Association of California, Redwood Empire Branch:

Chemical Nomination (CASN)	Nominations Justifications	Literature Screening Results	Latest IRIS Assessment	Respondent/Affiliation
<p>fiber)</p> <p>?(1332-21-4)</p>	<p>Association of California, general public (specifically, Oak Ridge High School in El Dorado Hills, CA); environmental organizations</p> <p>5. EPA meeting in 2002 (San Francisco) to update cancer RA for asbestos; UK scientist John Addison found amphibole asbestos fibers to be most carcinogenic, causing mesothelioma and lung cancer; McGill University in Montreal studies of asbestos workers in mines and mills; ASTDR studies about tremolite asbestos in Libby, Montana</p> <p>6. Widespread exposure, especially school children; amphibole asbestos fibers extremely biopersistent</p>			<p>Jenny Bard, Director of Communications, Fund-raising and Advocacy; Sacramento-Emigrant Trails Branch, Earl Withycombe, Board of Directors</p> <p>Human Health Risk Consultant: Rick A. Mills</p> <p>Oak Ridge High School: James Atwell, Kimberlie Franklin, John Ruport, Bina Quontamatteo, Stan Iverson, Chris Mirell</p> <p>El Dorado County Taxpayer for Quality Growth: Steven Proe</p> <p>Debbie Heise</p> <p>Christopher Anaya, Fire Fighter/Haz Mat Specialist</p> <p>Sierra Club, Maidu Group: Alice Q. Howard</p>